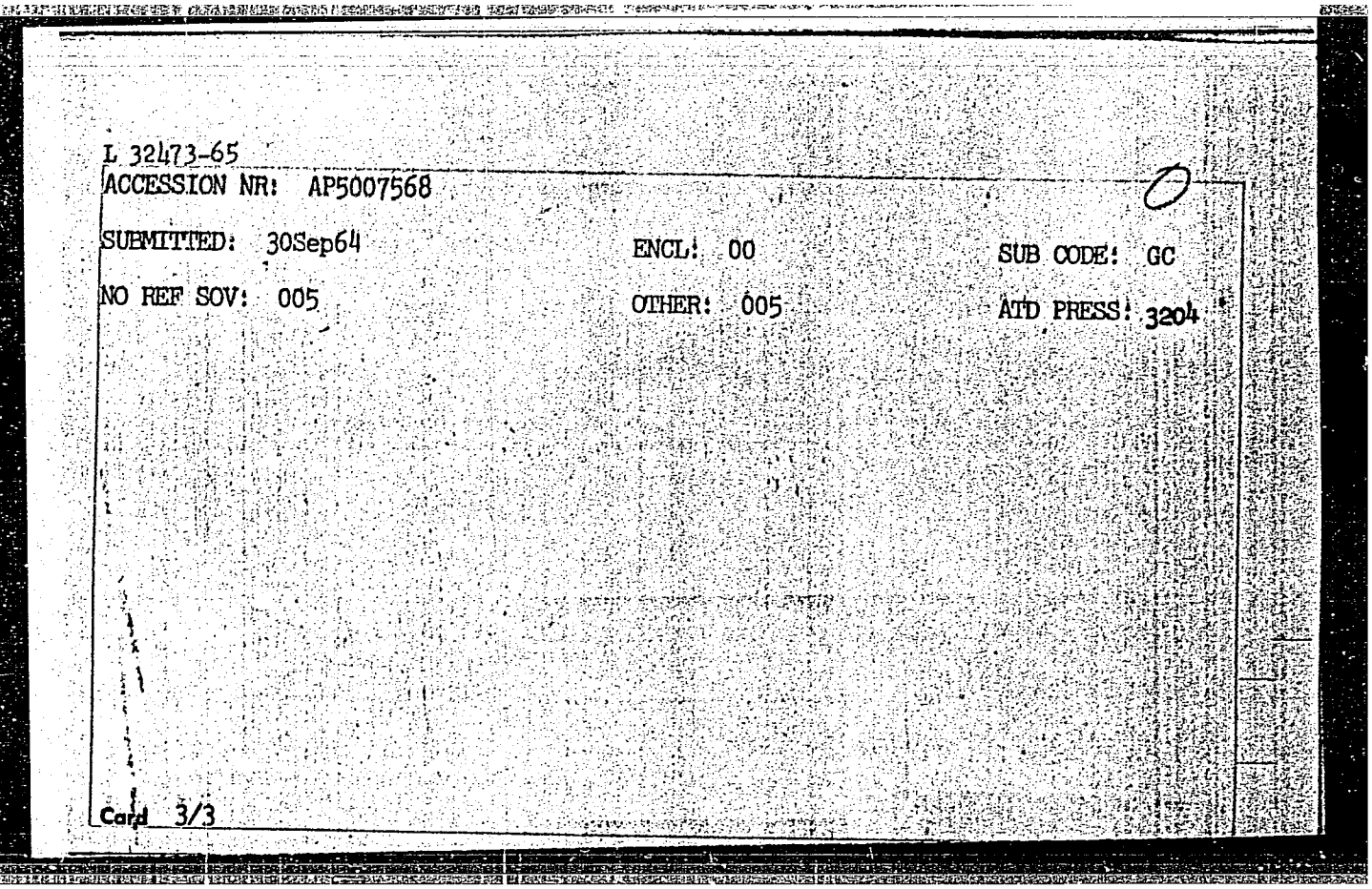


L 32473-65
ACCESSION NR: AP5007568

SUBMITTED: 30Sep64 ENCL: 00 SUB CODE: GC

NO REF SOV: 005 OTHER: 005 ATD PRESS: 3204

Card 3/3

CHERNICHENKO, V.Ya.; RODIONOV, R.A.; BASALAYEV, V.D.

A good and useful tradtion. Elek.i tepl.tiaga 7 no.2:43 F '63.
(MIRA 16:2)

1. Zamestitel' nachal'nika Kazakhskoy dorogi (for Chernichenko). 2. Zamestitel' nachal'nika sluzhby lokomotivnogo khozyaystva Kazakhskoy dorogi (for Rodionov). 3. Nachal'nik otdela remonta sluzhby Kazakhskoy dorogi (for Basalayev).
(Railroads—Employees)
(Railroads—Maintenance and repair)

RODIONOV, R.A.; BALIN, A.I.; KOROSTYLEV, B.N.

Synthesis of polyethylene terephthalate. Khim.volok. no.6:11-12 '61. (MIRA 14:12)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinstituta, g. Shostka.

(Terephthalic acid)

BALIN, A.I.; RODIONOV, R.A.

Analysis of esters of terephthalic acid. Plast.massy no.2:24-26 '61. (MIRA 14:2)

(Terephthalic)

SOV/86-58-8-30/37

AUTHOR: Grud'yan, A.I., Sen Engr Lt, and Rodionov, R.Ye.

TITLE: For Greater Exchange of Experience Among the Repair Shops (Shire obmen opytom mezhdu remontnymi predpriyatiyami)

PERIODICAL: Vestnik vozdushnogo flota, 1958, Nr 8, pp 81-82 (USSR)

ABSTRACT: The authors of this short article are of the opinion that a greater exchange of experience among the various organs would contribute much to improve the quality of repair work on aviation material.

Card 1/1

GRUD'YAN, A.I., starshiy inzh.-leytenant.; RODIONOV, R.Ye.

Let's have a greater exchange of experience among repair units.
Vest. Vozd. Fl. 41 no.8:81-82 Ag '58. (MIRA 11:9)
(Airplanes--Maintenance and repair)

USSR/ Miscellaneous

Card 1/1 : Pub. 89 - 19/28

Authors : Rodionov, S. and Revenkov, A.

Title : Exchange of experiences

Periodical : Radio 1, page 42, Jan 1954

Abstract : Two individual articles are presented under the above title. One deals with photo-printing on metals, and the other with the replacement of 30PIM tubes in AR3-49 radio receivers by beam tetrodes.

Institution: .....

Submitted: .....

RODIONOV, S.

Underground treasures. Vokrug sveta no.4:45-47 Ap '54.
(MLRA 7:4)

1. Chlen-korrespondent Akademii nauk USSR. (Ukraine--Natural history)

RODIONOV, S.

Rodionov, S. - "Acceleration of the turnover of capital," Mosk. Propagandist, 1949, No. 3, p. 28-36

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

RODIONOV, S. (L'vov)

Photoprinting on metal. Radio no.1:42 Ja '54. (MLRA 7:1)
(Photomechanical processes)

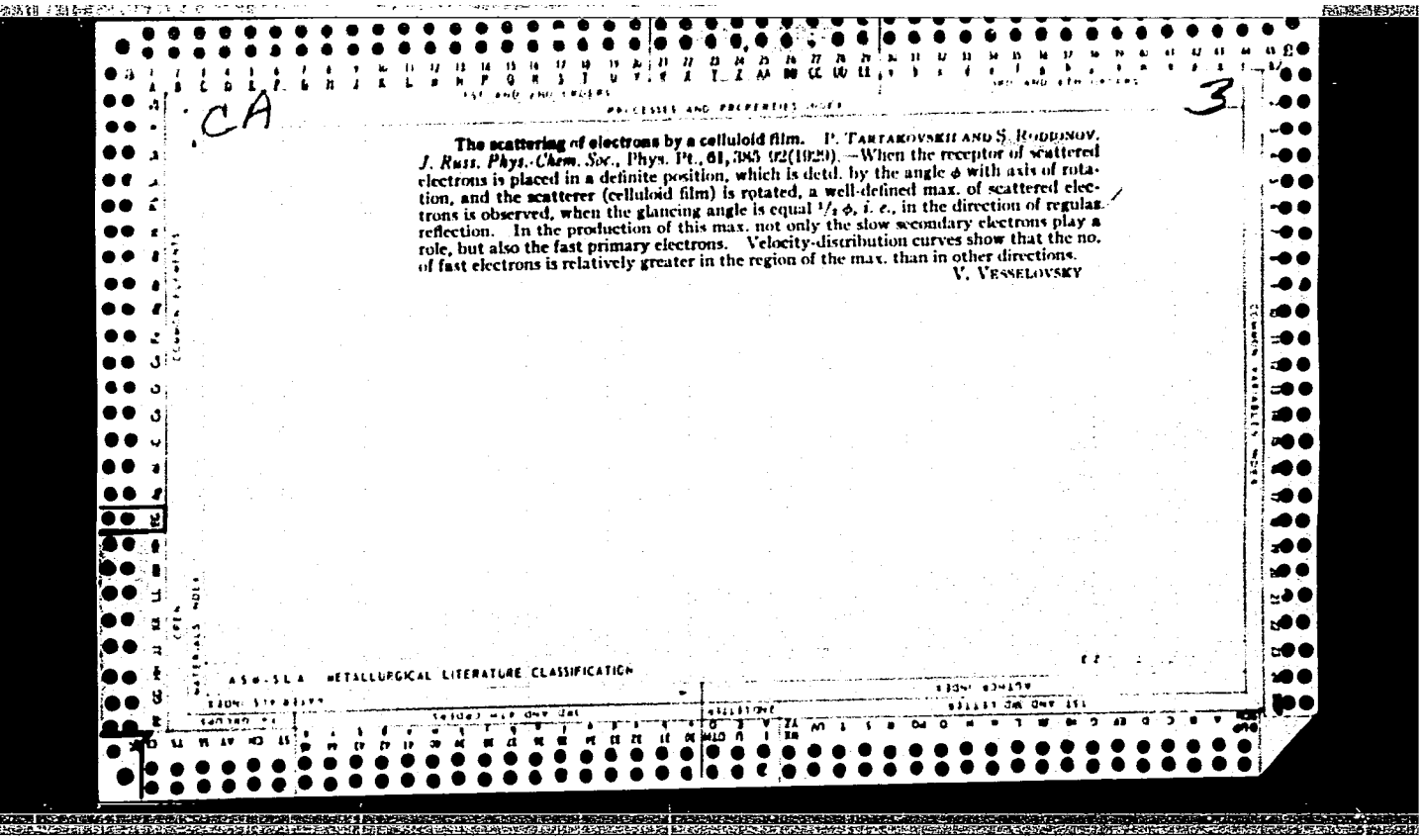
RODIONOV, S.

Pegmatites of the charnockite series of Podolia. p. 100.

ANALELE ROMINO-SOVIETICE. SERIA GEOLOGIE-GEOGRAFIE. Bucuresti, Rumania
Vol. 12, no. 2, Apr./June 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, No. 1, January.

Uncl.



CA

3

The scattering of electrons by a celluloid film. P. TARTAKOVSKII AND S. RODDINOV. *J. Russ. Phys.-Chem. Soc.*, Phys. Pt., 61, 385 (2)(1929).—When the receptor of scattered electrons is placed in a definite position, which is detd. by the angle ϕ with axis of rotation, and the scatterer (celluloid film) is rotated, a well-defined max. of scattered electrons is observed, when the glancing angle is equal $\frac{1}{2}\phi$, *i. e.*, in the direction of regular reflection. In the production of this max. not only the slow secondary electrons play a role, but also the fast primary electrons. Velocity-distribution curves show that the no. of fast electrons is relatively greater in the region of the max. than in other directions.

V. VESSELOVSKY

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

AMS/A + B

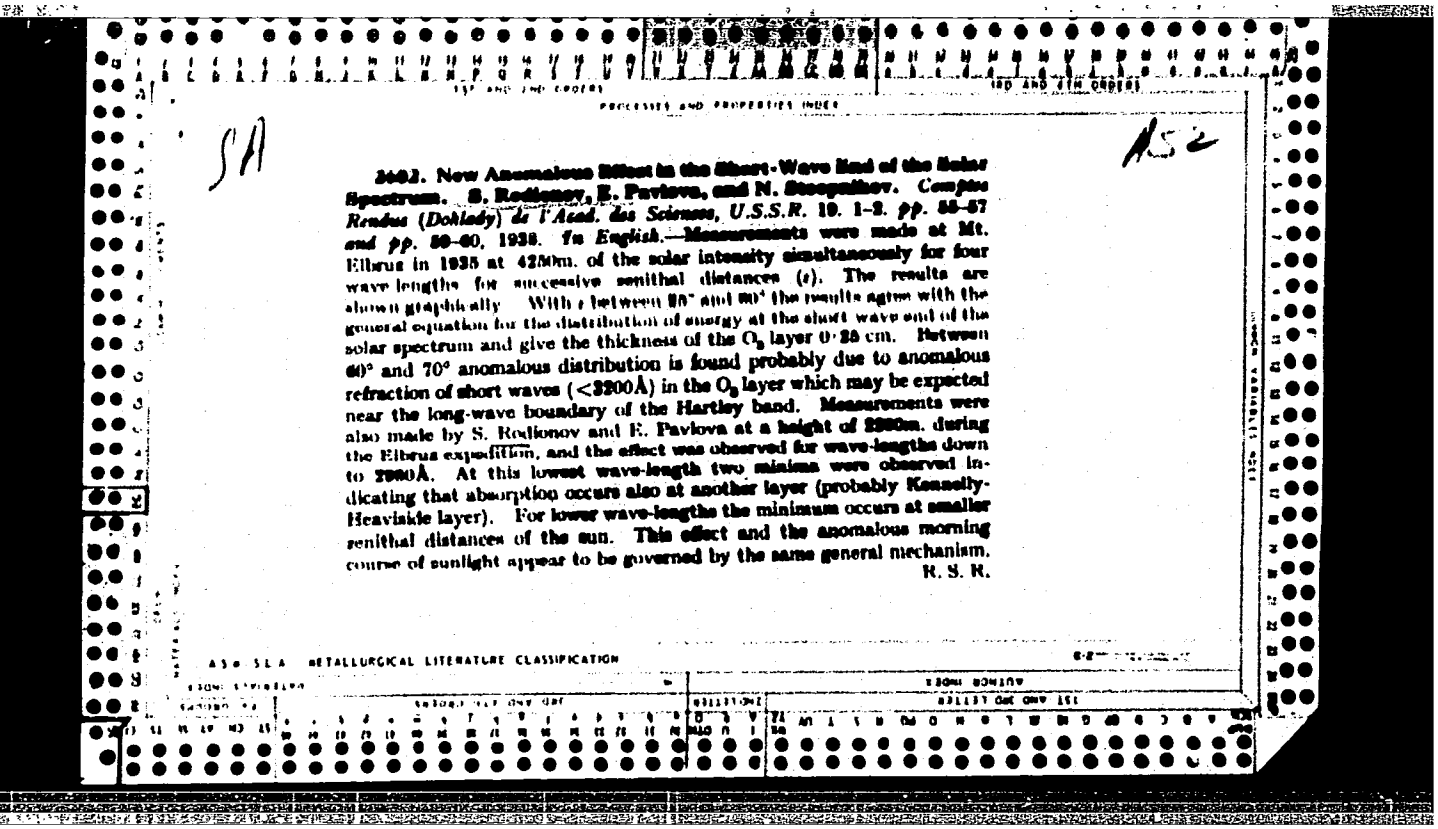
1†

APR 1951

2.4-93 551.521.1 551.521.63 551.5104

[illegible] [illegible]. [On the measurement of the short-wave end of the solar spectrum by means of the light counter.] (In Trudy El'brusskoi Ekspeditsii Akademii Nauk, SSSR, i Vsesoiuznogo Instituta Eksperimental'noi Meditsiny 1934 i 1935. [Reports of the Elbrus Expedition 1934 and 1935.] Moscow, 1936. p. 61-88. 27 figs., 3 tables, 13 refs., 13 equations. English summary p. 88-89. [Akademiia Nauk, SSSR, Komissiia po izucheniiu stratosfery, Tom II.]) DLC—Experimental data are presented in graphic form to show systematically the results of optical measurements of ultraviolet band in the solar spectrum during 1933 and 1934 at 2200, 5000 and 4250 m. elevations on Mount Elbrus in the Caucasus. Diurnal variations in the region 2700 to 3100 Å indicated that at lower elevations the curve is normal but at 5000 and 4250 m. there is evidence of the presence of anomalous bands at 2600 Å and an anomalous max. during the morning hours in the ordinary bands. The thickness of the ozone layer in the atmosphere was calculated from the spectral energy curve according to the Lambert-Bouguer method using α of *Fabry and* [illegible]. Although results are in agreement with theory; evidence of certain anomalous conditions must be accepted with reservation. *Subject Headings:* Solar radiation, Ultraviolet spectrum, Ozone measurements, Elbrus Expedition, U.S.S.R.—*M.R.*

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



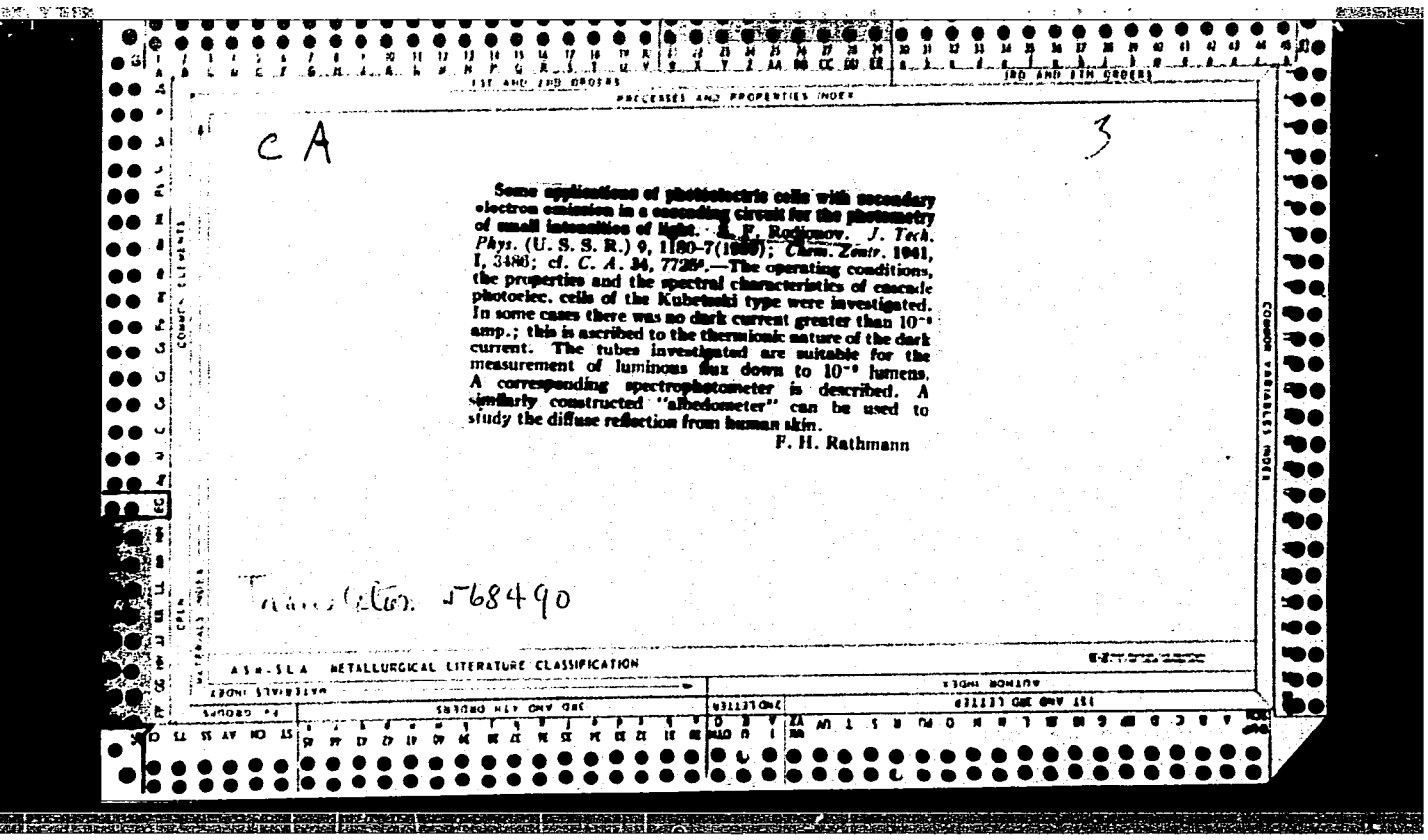
PROCESSES AND PROPERTIES INDEX

SA

A52

3402. New Anomalous Effect in the Short-Wave End of the Solar Spectrum. S. Rodionov, E. Pavlova, and N. Stoupnikov. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* **19.** 1–2. *pp.* 55–57 *and pp.* 59–60, 1938. *In English.*—Measurements were made at Mt. Elbrus in 1935 at 4250m. of the solar intensity simultaneously for four wave lengths for successive zenithal distances (z). The results are shown graphically. With z between 0° and 60° the results agree with the general equation for the distribution of energy at the short wave end of the solar spectrum and give the thickness of the O_3 layer 0·25 cm. Between 60° and 70° anomalous distribution is found probably due to anomalous refraction of short waves (<3200Å) in the O_3 layer which may be expected near the long-wave boundary of the Hartley band. Measurements were also made by S. Rodionov and E. Pavlova at a height of 2200m. during the Elbrus expedition, and the effect was observed for wave-lengths down to 2980Å. At this lowest wave-length two minima were observed indicating that absorption occurs also at another layer (probably Kennelly-Heaviside layer). For lower wave-lengths the minimum occurs at smaller zenithal distances of the sun. This effect and the anomalous morning course of sunlight appear to be governed by the same general mechanism. R. S. R.

A50 SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

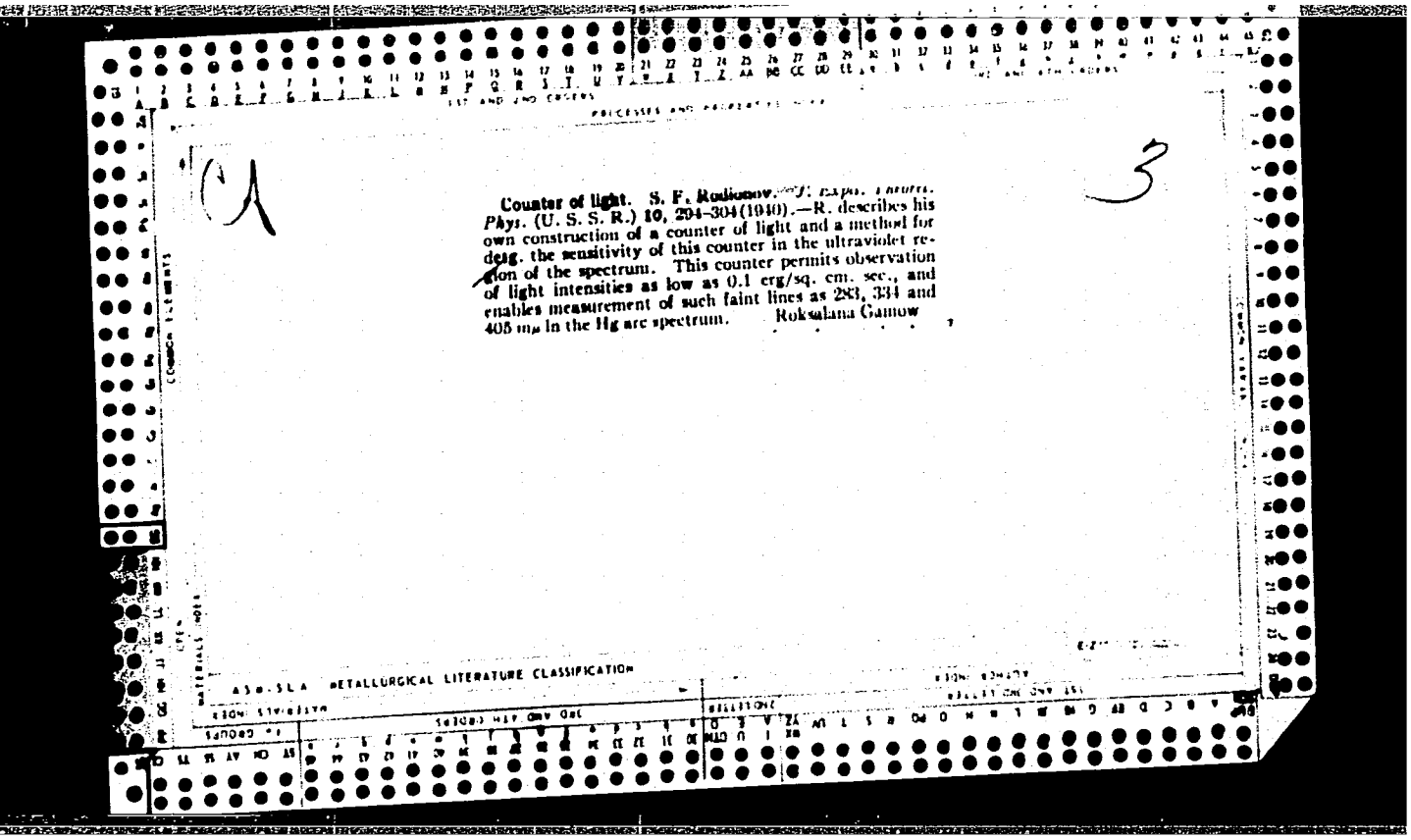
CA 3

Some applications of photoelectric cells with secondary electron emission in a cascading circuit for the photometry of small intensities of light. S. P. Rodionov. *J. Tech. Phys.* (U. S. S. R.) 9, 1180-7(1939); *Chem. Zentr.* 1941, I, 3486; *cf. C. A.* 34, 7728⁹.—The operating conditions, the properties and the spectral characteristics of cascade photoelec. cells of the Kubetzki type were investigated. In some cases there was no dark current greater than 10^{-8} amp.; this is ascribed to the thermionic nature of the dark current. The tubes investigated are suitable for the measurement of luminous flux down to 10^{-9} lumens. A corresponding spectrophotometer is described. A similarly constructed "albedometer" can be used to study the diffuse reflection from human skin.

F. H. Rathmann

Translation 768490

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Counter of light. S. F. Radionov, *J. exptl. theoret. Phys.* (U. S. S. R.) **10**, 294–304 (1940).—R. describes his own construction of a counter of light and a method for detg. the sensitivity of this counter in the ultraviolet region of the spectrum. This counter permits observation of light intensities as low as 0.1 erg/sq. cm. sec., and enables measurement of such faint lines as 283, 334 and 405 mμ in the Hg arc spectrum. Roksalana Gamow

FEDICHEV, E. F.

Inst. for Theor. Geophys., Acad. of Sci., USSR, (-1942-)

Inst. of Physics, LGU, (-1942-)

"The Selective Transparency of the Atmosphere Aerosols", Iz. Ak. Nauk SSSR, Ser. Geograf. i Geofiz., Nos. 1-6, 1942 pages 135-147

Translation 563849

RODIONOV, S. F.

USSR/Physics
Photometry
Lights - Measurements

Feb 49

"Photoelectric Photometry of Small Light Streams," A. L. Osherovich, Ye. N. Pavlova, S. F. Rodionov, L. M. Fishkova, Sci Res Phys Inst, Leningrad State U, 18½ pp

"Zhur Tekh Fiz" Vol XIX, No 2

Treats under: (o) sensitivity of a system consisting of a photoelectronic multiplier and a tube amplifier, (2) characteristics of certain types of photoelectronic multiplier which can be used to measure small light streams, (3) spectrum characteristics of some photoelectronic multipliers, (4) photometer circuit, (5) characteristics of photometer for measuring light streams to 10^{-10} light meters, (6) photometer for measuring light streams to 10^{-12} light meters, (7) photometer with a balance DC amplifier, (8) some applications of the photometer for measuring small illuminations, and (9) photon counter. Includes 16 diagrams. Submitted 19 Apr 48.

PA 40/49T104

Translation-6847 6

USSR/Geophysics Feb 49
Spectrophotometer
Ozone

"Spectrophotometer With A Secondary Electronic Amplifier for Ozonometric Measurements," S. F. Rodionov, A. L. Osherovich, Sci Res Phys Inst, Leningrad State U imeni A. A. Zhdanov, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 5

Constructed photometric device with secondary electronic amplifier to increase the sensitivity of Dobson's spectrometer for use in a number of problems, in particular, for investigation of so-called "anomalous transparency" effect, measurement of ozone during

"White nights," etc. Submitted by Acad A. N. Terenin, 29 Sep 48.

29/49T40

RODIONOV, S. F.

RODIONOV, S. F. and PAVLOVA, Ye. N.

"The Radiation of Atmospheric Sodium", Dokl AN SSSR, Nov Ser, Vol. LXIV, No. 6, pp 26
251-255, 1949.

CA

Infrared emission of the night sky. S. F. Rozhnov and E. N. Pavlova (A. A. Zhdanov State Univ., Leningrad). *Doklady Akad. Nauk S.S.S.R.* 65, 831–4(1949).—In the range 1100–800 mμ, the most intense band is 1044 mμ, about 3–4 times more intense than 800 mμ. A band at 891 mμ is doubtful. The 1044 band is ascribed to recombination of N atoms produced by the ultraviolet radiation of the sun, $N + N + N_2 \rightarrow N_2 + N_2^*$, where N_2^* is in the excited state $B^3\Pi_g$. N. Thon

USSR/Physics
Radiation

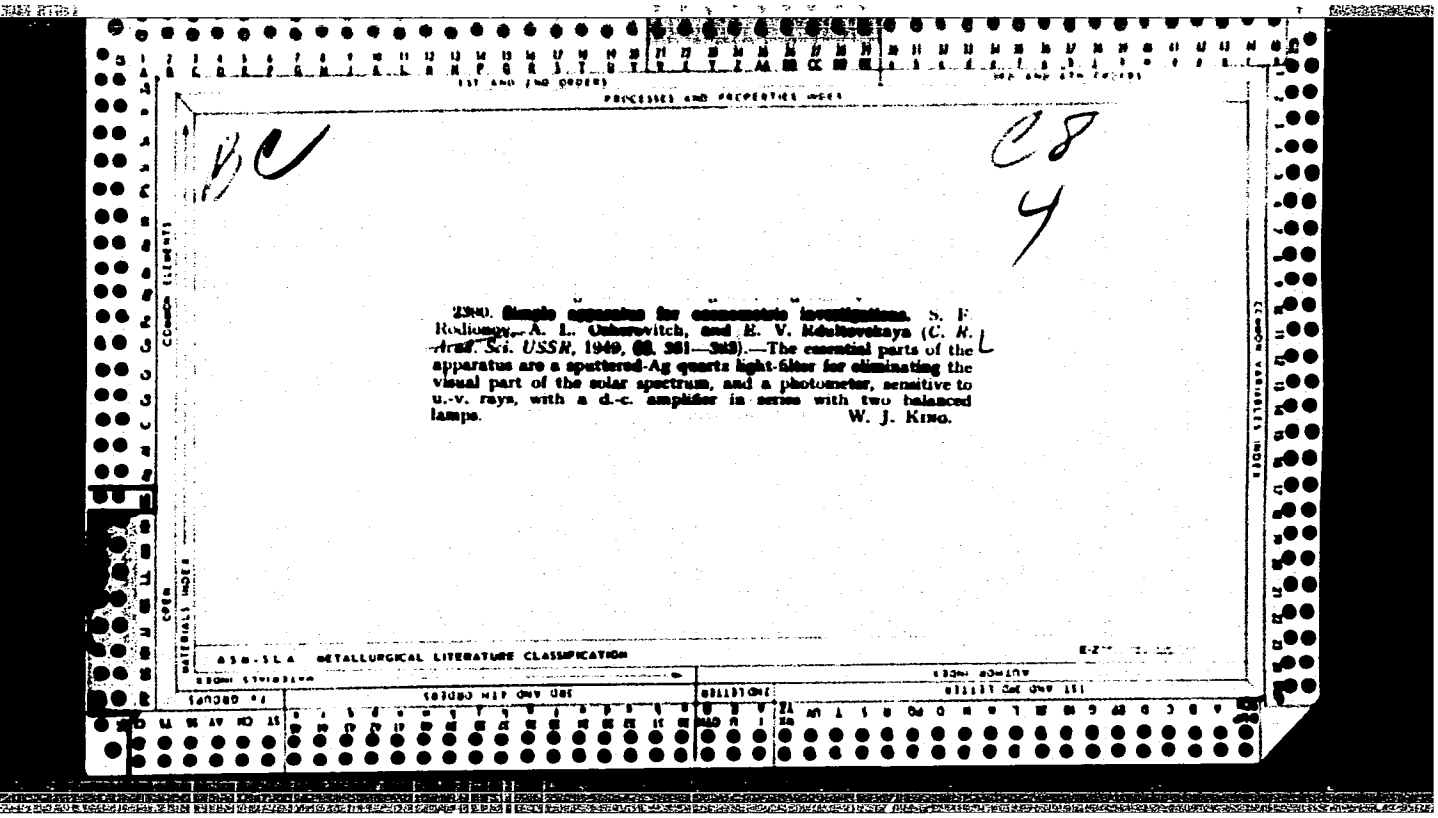
May 49

"Measuring the Green-Radiation Line of the Nocturnal Sky Using a Photometer With a Secondary Electron Amplifier," S. F. Rodionov, Ye. N. Pavlova, Ye. V. Rdultovskaya, Sci Res Phys Inst, Leningrad State U imeni A. A. Zhdanov, 2 3/4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 1

Gives data on subject measuring, recommended for simplicity of operation, sensitivity, and precision for studying stationary type of radiation in upper atmospheric strata. Submitted by Acad Terenin, 5 Mar 49.

50/49T95



2380. **Simple apparatus for colorimetric investigations.** S. F. Rodionov, A. L. Osherovitch, and E. V. Mokhovskaya (*C. R. Acad. Sci. USSR*, 1949, **68**, 361—363).—The essential parts of the apparatus are a sputtered-Ag quartz light-filter for eliminating the visual part of the solar spectrum, and a photometer, sensitive to u.-v. rays, with a d.-c. amplifier in series with two balanced lamps. W. J. Kroll.

RODINOV, S. F.

PA 54/49T67

USSR/Geophysics Jul 49
Atmosphere
Stratosphere

"The Radiation of Atmospheric Sodium," S. F. Rodinov Ye. N. Pavlova, Sci Res Inst of Phys, Leningrad State U imeni A. A. Zhdanov, Mt'brus Complex Sci Expedition, Acad Sci USSR, 3½ pp

"Dok Ak Nauk SSSR" Vol LXVII, No 2, pp 251-254

Made this study, of importance in problems on atmospheric structure and upward currents in the stratosphere by using a spectrometer consisting of an M-1 monochromator (Experimental Works of

54/49T67

USSR/Geophysics (Contd) Jul 49

Leningrad State U Phys Inst) and a photometer with a photoelectric amplifier. Made measurements of twilight at an altitude of 2,200 meters at Adyl-su, Caucasus. Resultant data showed presence of sodium at altitudes of, or over, 60 km, and at considerably lower altitudes. Submitted by Acad A. N. Terenin 12 May 49.

Translation 57378

54/49T67

[redacted], S.F.

New Soviet Data on Night-Sky Radiation.

Van 3/50.

RODIONOV, S. F.

PA 187T81

USSR/Physics - Infrared Studies in Air May/Jun 50

"Radiation and Absorption of Light in Certain Layers of the Atmosphere," S. F. Rodionov; El'brus Expedition of Geophys Inst, Acad Sci USSR, and Sci Res Phy Inst, Leningrad State U imeni Zhdanov

"Iz Ak Nauk SSSR, Ser Fiz" Vol XIV, No 3, pp 247-256

Presents results of further investigations into the infrared component of night-sky radiation; also results of recent studies of the phenomenon of anomalous transparency of the atm, discovered in 1936 by Rodionov, Ye. N. Pavlova and N. N. Stupnikov in the

187T81

USSR/Physics - Infrared Studies in Air May/Jun 50
(Contd)

ultraviolet region of the spectrum. Submitted 31 Jan 50 at session of the Dept of Physicomath Sci, Acad Sci USSR.

Translation ATIC-123233
F-TS-8709/III

187T81

USSR/Geophysics - Upper Air Jul/Aug 50
Transparency, Atmospheric

"Transparency of the Atmosphere to Ultraviolet," S. F. Rodionov, Geophys Inst, Acad Sci USSR

"Iz Ak Nauk SSSR, Ser Geograf i Geofiz" Vol XIV, No 4, pp 334-358

PA164T39

Describes anomalous transparency of the atmosphere to ultraviolet, i.e., when rays pass obliquely through the atmosphere, its relative transparency is increased in the region 3,100-2,900 A. Effect was discovered and investigated with sensitive electrophotometers (photon counters, secondary-electron

164T39

USSR/Geophysics - Upper Air (Contd) Jul/Aug 50

tubes) in measuring short-wave end of spectrum. Effect is explained by selective absorption of lower atmospheric layers (permanent layer of aerosols). This absorption was later discovered and measured by Rodionov. Comparison of anomalous transparency with Gotz's "inversion" effect reveals two effects are directly related and that Gotz and Dobson's method, based on inversion effect, for measuring vertical distribution of ozone is erroneous. Submitted 26 Oct 49 by Acad V. G. Fesenkov.

164T39

RODIONOV, S. F.

RODIONOV, S. F.

USSR/Geophysics - Night Sky 21 Feb 50

"Infrared Radiation of the Northern Lights," S. F. Rodionov, L. M. Fishkova, Phys Inst, Leningrad State U imeni A. A. Zhdanov

"Dok Ak Nauk SSSR" Vol LXX, No 6, pp 1001-1003

Gives results of measurements made in Mar 49 of intensity of infrared and green radiation for northern lights of various forms (diffuse, draperies, arcs, etc.) and for ordinary night-sky luminescence. Measurements revealed radiation of northern lights in the region 9,000-10,800 A was 20-30 times intensity of strong green line (5,577 A). Comparison with observations made on Mt El'brus in summer 1948 showed

165T24

USSR/Geophysics - Night Sky (Contd) 21 Feb 50

Intensity of night-sky luminescence at northern latitude (exact latitude not given) is slightly greater than at Mt El'brus. Submitted 26 Nov 49 by Acad A. A. Lebedev.

165T24

166T29

USSR/Geophysics - Radiation, Infrared 1 Jul 50
Night Sky

"Distribution of Brightness of Night-Sky Infrared Radiation Over the Celestial Arch," Ye. N. Pavlova, S. F. Rodionov, M. S. Sominskiy, S. M. Fishkova, Phys Inst, Leningrad State U imeni A. A. Zhdanov, and Mt El'brus Expedition of Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIII, No 1, pp 69-72

Infrared measurements of night sky in fall 1949 on Mt El'brus (2,200 and 4,200 m elevation) using photometers with secondary-electron electrostatic tube. Confirmed infrared radiation

166T29

USSR/Geophysics - Radiation, Infrared 1 Jul 50
(Contd)

maximum at midnight. Found intensities of 1.12 x 10^{-2} and 3.07 x 10^{-2} erg/sq cm sec sterad, respectively, for heights of 2,200 and 4,200 m. Found radiating layer to be 900 km high. Submitted 4 May 50 by Acad A. A. Lebedev.

166T29

RODIONOV, S. F.

RODINOV, S. F.

PA 174T46

USSR/Nuclear Physics - Counters 21 Sep 50
New Techniques
Photons

"Secondary-Electron Counter of Photons," S. F. Rodinov, A. L. Osherovich, Phys Inst, Leningrad State U imeni Zhdanov

"Dok Ak Nauk SSSR" Vol LXXIV, No 3, pp 461-463

Device for counting "visible" photons (3,600 to 6,500), convenient for measuring light flow of order of 10^{-14} - 10^{-15} lumens. Device consists of Devar, photocathode, liquid air, metal shield

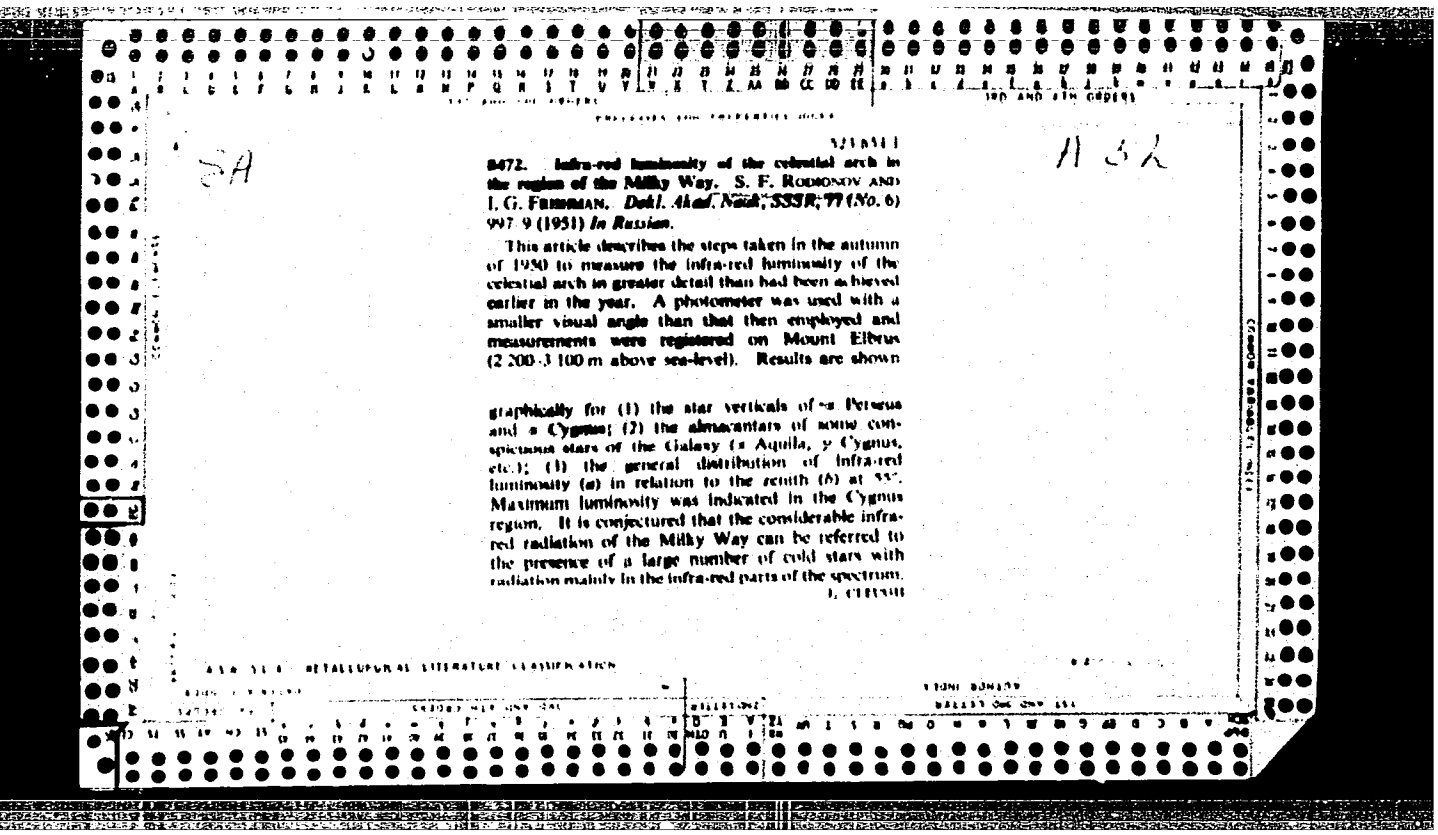
174T46

USSR/Nuclear Physics - Counters (Contd) 21 Sep 50

photoshutter, ebonite insulation, high-voltage leads (1,300 v), potentiometer, output of collector, desiccator. Circuit diagram of radiation receiver, using industrial Sb-Cs FEU-15 photocathode. Submitted 12 Jun 50 by Acad A. A. Lebedev.

174T46

A photon counter with an antimony-cesium cathode. S. E. Rodionov, E. N. Pavlova, and I. B. Karetnikova (Leningrad State Univ.). *Zhur. Eksptl. Teoret. Fiz.* 21, 657-8(1951). A counter with a plane Sb-Cs cathode and a loop anode, filled with a H_2 + A mixt., showed const. response for 30 days, red sensitivity limit at 5500 A., max. sensitivity at 3500 A. At the max., log ε (no. of impulses/ incident photon) ~ −5.2. N. Thon



3A

11 32

8472. **Infra-red luminosity of the celestial arch in the region of the Milky Way.** S. F. Rodionov and I. G. Fridman. *Dokl. Akad. Nauk, SSSR*, 77 (No. 6) 997–9 (1951) *In Russian.*

This article describes the steps taken in the autumn of 1950 to measure the infra-red luminosity of the celestial arch in greater detail than had been achieved earlier in the year. A photometer was used with a smaller visual angle than that then employed and measurements were registered on Mount Elbrus (2 200–3 100 m above sea-level). Results are shown graphically for (1) the star verticals of α Persei and α Cygni; (2) the almucantars of some conspicuous stars of the Galaxy (α Aquila, γ Cygni, etc.); (3) the general distribution of infra-red luminosity (a) in relation to the zenith (b) at 55°. Maximum luminosity was indicated in the Cygnus region. It is conjectured that the considerable infra-red radiation of the Milky Way can be referred to the presence of a large number of cold stars with radiation mainly in the infra-red parts of the spectrum.

USSR/Geophysics - Night-Sky Illumination 21 Aug 51

Measuring the Ultraviolet Illumination of the Night Sky," S. F. Rodionov, Ye. N. Pavlova, Phys Inst, Leningrad State U imeni Zhdanov, and El'brus Expedition of Geophys Inst, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIX, No 6, pp 961-964

Purpose is to investigate the nocturnal variations and distribution, over the celestial arc, of the brightness of the ultraviolet radiation of the night sky. Such measurements in the ultraviolet region of the spectrum possess significance for the

222T40

explanation of the role of scattering of the sun's light at night, a problem considered by P. P. Dobrobravin and I. A Khvostikov (cf "Dok Ak Nauk SSSR" 23, 233, 1939). Submitted by Acad A. A. Lebedev 20 Jun 51. Indebted to B. A. Kizel' and S. A. Bezverkhnyy for their measuring.

222T40

RODIONOV, S. F.

Translation -
Geophysics (Res. Lab., Cambridge, Mass.
Contract no. AF 19 (604) - 203.
12.2.53

RODIONOV, S. F.

Meteorological Abst.
Vol. 4 No. 5
May 1953
Meteorological
Observations and
Instruments

4.5-60

Bezverkhnii, Sh. A., Oshercvich, A. L., and Rodionov, S. F. 551.508.93:551.521.63:535.33
Elektrofotometricheskie issledovaniia prozrachnosti atmosfery v ul'trafioletovoi oblasti spektra. [Electro-photometric investigations of atmospheric transparency in the ultraviolet region of the spectrum.] *Akademiia Nauk, SSSR, Izvestiia, Ser. Geofiz.*, No. 3:93–102, 1952. 13 figs., 2 tables, 13 refs.
DLC—Methods and apparatus for determining the ozone content of the atmosphere and for investigating the phenomenon of anomalous transparency at wave length 2850–4000 Å associated with an aerosol component of the atmosphere are described. The apparatus consists of a monochromator of double resolution with an attached photometer. Circuit diagrams and descriptions are given of spectrophotometer with a photoelectric multiplier, of an integral photometer with a photomultiplier for increasing sensitivity and of an integral photometer with a photoelectric cell. The results of measurements of the ultraviolet radiation of the sun and moon and of the phenomenon of anamolous transparency are presented. *Subject Headings:* 1. Electrophotometry 2. Atmospheric transparency 3. Ultraviolet spectrum 4. Ozone measurement techniques 5. U.S.S.R.—*I.L.D.*

RODIONOV, S. F., DZIMISTARISHVILI, O. D., OSHEROVICH, A. L., RAZMADZE, N. A.

"Stellar Electric Photometer With Photomultiplier," Byull. Abastumansk. Astrofiz. observ., No 16, 1954, pp 3-7

Tentative results of testing the stellar photometer with photomultiplier (FEU) assembled according to the design by A. L. Osherovich, Ye. N. Pavlova, and others, (Zh. tekh. fiziki, 1949, 19, 184) are presented. The sensitivity of the photometer allows use of the 33 cm reflector with or without filters up to 9th magnitude stars. (RZhAstr, No 4, 1955)

SO: Sum. No. 568, 6 Jul 55

DZIMISTARISHVILI, O.D.; OSHEROVICH, A.L.; RAZMADZE, N.A.; RODIONOV, S.F.

Stellar electrophotometer with photo-multiplier. Dokl.AN SSSR 95 no.5:955-956 Ap '54. (MLRA 7:4)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova Abastumanskaya astrofizicheskaya observatoriya Akademii nauk Gruz.SSR. Predstavleno akademikom A.A.Lebedevym. (Photometry, Astronomical)

RODIONOV, S. F.

USSR/Geophysics - Luminescence

Card : 1/1

Authors : Osherovich, A. L. and Rodionov, S. F.

Title : Luminescence of the nocturnal sky in the range of from 1 to 3 nicrons

Periodical : Dokl. AN SSSR, 96, Ed. 6, 1159 - 1160, June 1954

Abstract : A special electro-photometer with sulfur-lead photo-resistance was designed for measuring the luminescence intensity of the nocturnal sky in a spectrum range of from 1 to 3 μ. The measurements were carried out during September 13, 16 and 20, 1953 from the Mountain Astronomical Observatory of the Acad. of S. USSR at an altitude of 2130 m. The lens of the photometer was always directed toward alpha-Cygnus. The results obtained are given in graphic form. Nine references. Graphs.

Institution : The A. A. Zhdanov State University, Physics Institute, Leningrad

Presented by : Academician A. N. Terenin, March 18, 1954

RODIONOV, S.F.

USSR/Geophysics

Card 1/1 Pub. 22 - 19/47

Authors : Pavlova, E. N.; Rodionov, S. F.; and Sholokhova, E. D.

Title : Energy distribution in the luminosity spectrum of the nocturnal sky

Periodical : Dok. AN SSSR 98/5, 769-771, Oct 11, 1954

Abstract : The subjectivity and low accuracy of the visual and photo-methods, employed until now for the study of the luminosity of the nocturnal sky, are discussed. New electro-photometric methods, which make possible the study of energy distribution of the luminosity of the nocturnal sky, are described. Results obtained by measuring the luminescence intensity of the nocturnal sky (measurements conducted in the El'brus and southern regions of Georgian-SSR), are listed in detail. Thirteen references: 2-USA; 1-English and 10-USSR (1924-1951). Graph.

Institution : State University, Scientific Research Physics Institute, Leningrad

Presented by: Academician V. G. Fesenkov, April 19, 1954

Translation 053540

RODIONOV, S. F.

USSR/Geophysics

Card 1/1 : Pub. 22 - 19/44

Authors : Rodionov, S. F.; Pavlova, E. N.; Sholokhova, E. D.; and Fishkova, L. M.

Title : Yearly variations of infrared radiation of the night sky

Periodical : Dok. AN SSSR 98/6, 957-960, October 21, 1954

Abstract : The results of experiments with infrared radiation of the night sky, conducted on Mount Elbrus during 1948-1953, are presented. Four Russian references (1948-1951). Graphs.

Institution : Leningrad State University im. A. A. Zhdanov; Elbrus Complex Scientific Expedition of the Acad. of Scs. of the USSR

Presented by: Academician V. G. Fesenkov, April 19, 1954

Translation D-538541

RODIONOV, S.F.

FD-1826

USSR/Physics - Light counter

Card 1/1 Pub 146-11/25

Author : Rodionov, S. F.; Khaykin, M. S.; Shal'nikov, A. I.

Title : Self-quenching light counters

Periodical : Zhur. eksp. i teor. fiz. 28, 223-227, February 1955

Abstract : The authors describe self-quenching light counters. They present the special characteristics of counters with photocathodes made of platinum, aluminum, and magnesium. The described self-quenching photon counter possesses very stable counting properties and sufficient sensitivity convenient for mass production. The design and construction were carried out in the Institute of Physical Problems, Academy of Sciences USSR, by A. I. Shal'nikov and M. S. Khaykin; and the measurements of the spectral sensitivity of the counters were done in the Physical Institute, Leningrad State University, by S. F. Rodionov. Five references; e.g. S. F. Rodionov and A. I. Shal'-nikov, ibid. 5, 160, 1935.

Institution: Institute of Physical Problems, Academy of Sciences USSR

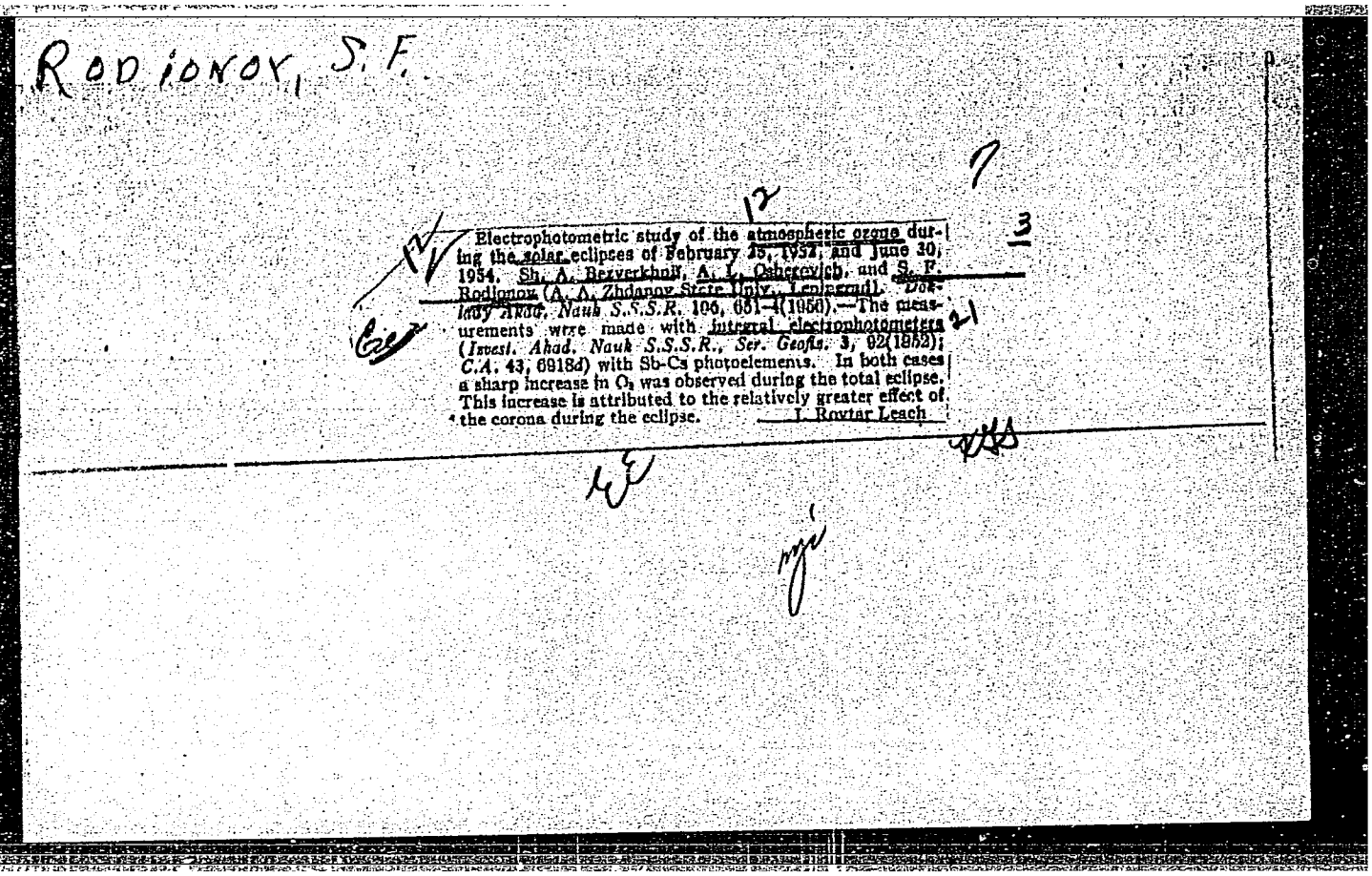
Submitted : March 31, 1954

Rodionov, S. F.

523.72; 551.593.5 1705

Investigation of Sky Brightness in the Spectral Region near 1 μ during the Solar Eclipse of 30th June 1954. S. F. Rodionov & E. D. Sholokhova. (*C. R. Acad. Sci. U.R.S.S.*, 1st Dec. 1955, Vol. 105, No. 4, pp. 676-679. In Russian.) The variation of the atmospheric infrared radiation excited by the incident solar ultraviolet radiation was investigated. Intensity variations observed at wavelengths of 1 μ and 0·71 μ indicate that the radiation from the corona is richer in ultraviolet than the radiation from the sun as a whole.

Physics Inst., Leningrad State U.



RODIONOV, S. F.

Electrophotometric study of the atmospheric ozone during the solar eclipses of February 25, 1952, and June 30, 1954. Sh. A. Bezverkhnii, A. L. Osherovich, and S. F. Rodionov (A. A. Zhdanov State Univ., Leningrad). *Doklady Akad. Nauk S.S.S.R.* 106, 651–4(1956).—The measurements were made with integral electrophotometers (*Izvest. Akad. Nauk S.S.S.R., Ser. Geofiz.* 3, 92(1952); *C.A.* 43, 6918d) with Sb-Cs photoelements. In both cases a sharp increase in O_3 was observed during the total eclipse. This increase is attributed to the relatively greater effect of the corona during the eclipse. — I. Rovtar Leach

RODIONOV, S.F.

51-5-9/26

AUTHOR: Rodionov,S.F.

TITLE: An Electrophotometric Study of the Night-Sky Luminosity. (Elektrofotometricheskiye issledovaniya svetimosti nochnogo neba)

PERIODICAL: Optika i Spektroskopiya,1957, Vol.2, Nr 5, pp. 606-615 (USSR)

ABSTRACT: The paper reports results of the Photometry Laboratory of the Physics Institute of Leningrad State University obtained between 1948 and 1956 by A.L. Osherovich, E.N.Pavlova, L.M.Fishkova, E.D.Sholokhova and S.F.Rodionov. The night-sky and twilight luminosities were studied in the Caucasus mountains to obtain the best optical conditions. Photomultipliers with caesium-oxide and antimony-oxide cathodes, photoresistances and photon counters were used. With these instruments radiation down to 10^{-6} erg.sec.$^{-1}$ cm^{-2}.steradian was obtained. Fig.1 shows the curves of the spectral sensitivity for the methods used. Other figures give the results obtained. Diurnal variations of the infrared emission of the nightsky were found. The energy distribution in absolute units of the nightsky emission was measured. Infrared radiation of the Milky Way was observed. Twilight flares of the radiation from the upper

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An Electrophotometric Study of the Nightsky Luminosity. 51-> 9/26

atmosphere in the visible and infrared regions were observed and studied. Diurnal variations of the nightsky in the ultraviolet region were observed and the brightness distribution across the sky was measured. Positive correlation of the infrared radiation of the nightsky with solar activity was established. The infrared component of the aurora was measured. The mechanism of excitation of the nightsky radiation, taking into account the scattered short-wavelength ultraviolet light from the Sun, is discussed. Such light is present in the upper atmosphere even at night, due to anomalous refraction and secondary scattering. This light dissociates both the normal and the excited molecules and atoms. There are 9 figures, 3 tables and 12 references, all of which are Slavic.

ASSOCIATION: Leningrad State University, Elbrus Expedition, Geofian, SSSR. (Leningradskiy Gosudarstvennyy Universitet, El'brusskaya Ekspeditsiya, Geofian, SSSR)

SUBMITTED: July 4, 1956.

AVAILABLE: Library of Congress.

Card 2/2

RODIONOV, S. F., DOL'SHAKOVA, L. G., GEORGIYEVSKIY, Yu. N., OTTO, A. N.,

"Electrophotometric Investigations of Night Glow," Mezhdunarodnyy Geofizicheskiy God - Informatsionnyy Byulleten' /IGY - Information Bulletin/ No. 4, Moscow, 1958; pp. 58,59.

(Translation - 9030841) (JPRS/NY-L-233, 30 June 1958)

RODIONOV, S.F

SOV/49-58-8-14/17

AUTHORS: Bol'shakova, L.G., Georgiyevskiy, Yu.N., Otto, A.N. and Rodionov, S.F.

TITLE: On the Electrophotometric Investigation of the Illumination of the Night Sky (Ob elektrofotometricheskom issledovanii svecheniya nochnogo neba)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 8, pp 1044 - 1047 (USSR)

ABSTRACT: In measurements of this type, the illumination is usually obtained by determining the increase in photo-current at fixed intervals of time. Experiments carried out by the photometric laboratory of the Physics Institute (LGU) under field conditions (Refs 1 and 2) indicate that this method does not always give the full details of intensity changes. This occurs in particular when there are sharp deviations from the generally smooth diurnal variation. In order to obtain a more detailed knowledge of the intensity variations during the IGY, it became necessary to devise an automatic method of continuously recording the photocurrent. The general layout of the apparatus is given in Figure 1. The photomultiplier has a shutter in front which is open in the working position (Figures 1 and 3). Every ten minutes, the shutter is

Card1/7

On the Electrophotometric Investigation of the Illumination of the Night Sky

closed for 40 sec by the relay system 4 and 5 (Figure 1), worked by a time mechanism 6 (obtained from a thermograph or barograph). To control the sensitivity, a lamp (2) can be switched on every 60 min by the time mechanism. Position A in the diagram corresponds to the working position and position B, to the inclusion of the standard lamp. The photomultiplier was kept in a special casing (Figure 2) which provided special cooling to diminish the dark current. Figure 3 shows an example of the traces obtained (with a recording apparatus of type EPP-09). The maximum (at about 1 μ) which appeared at midnight and lasted for five minutes can be easily seen - this would not have been noticed with normal discontinuous recording. This maximum had been observed earlier (Ref 1) but not in so sharp a form.

In the summer and autumn of 1956, parallel measurements were carried out at two stations on the Elbrus (at 2 200 and 3 900 m) to determine the radiation intensity of the night sky. The aim was to discover the influence of

On the Electrophotometric Investigation of the Illumination of the Night Sky

irregular changes in the transparency of air on the measured magnitudes of the night sky illumination. It was established that while the diurnal variation at 3 900 m was reasonably smooth, the variation at 2 200 m showed irregular fluctuations (Figure 4). Thus, by using two stations, it was possible to make an allowance for the oscillations in transparency. The results also confirmed previous data on the weakening of night sky radiation in the layer 2 200 - 3 900 m. This varied between factors of 2.5-3 for the 1 μ region.

Photometric investigations of infra-red radiation from the night sky have, up to the moment, depended on either a spectrophotographic method or a method using a sensitive electrophotometer with light filter. The first method is difficult to use for detailed investigations into the diurnal variation, whilst the second does not admit of detailed investigation into the energy distribution of the radiation.

In the autumn of 1956, the authors obtained a recording of the infra-red radiation from the night sky in the

On the Electrophotometric Investigation of the Illumination of the Night Sky

region of 1 μ with a photomultipler (cooled caesium oxide cathode) used with a monochromator. Using wide slits, light signals from the night sky were obtained twice as large as the background noise (15×10^{-9}a as compared with 7×10^{-9}a). The apparatus employed was the same as in Refs 1 and 2. It seems possible that further development may make this the most useful method for studying the structure of the night sky radiation.

The authors next discuss some methods applied in the photometric laboratory of the Physics Institute for the accurate determination of the parameters of electrophotometers.

Two stages of measurement are required for obtaining the spectral characteristics, i.e. the quantity ε_λ defined as the ratio of the photocurrent at the output of the photomultiplier and the spectral intensity producing the current (ε_λ is measured in absolute units).

1) Determining the amount of energy falling on the photo-

On the Electrophotometric Investigation of the Illumination of the Night Sky

cathode in absolute units. 2) Measuring the corresponding photocurrent. The authors used for these measurements a monochromator (UM-2) which permitted the making of measurements in the region 1 - 0.4 μ . The light source was an ordinary electric bulb with a straight filament focused by a condensing lens. The light current at the monochromator output was measured with a thermo-element (LETI - B.P. Kozyrev's system) with a sensitivity of about 1 V/W . The thermocurrent was measured either by a galvanometer (sensitivity 3.8×10^{-10} A/mm/m) or by a photo-electronic optical amplifier (FEOU-15--LETI). When the spectral energy distribution at the monochromator output has been measured, the thermo element is replaced by the photoelectric receiver under investigation. The measurements of photocurrent are then repeated and the ratio of the photocurrent in amperes to the spectral intensity in cal/sec gives ε_λ in Coulomb/calory.

Control experiments on the electrophotometer sensitivity must be carried out regularly using a special etalon with

On the Electrophotometric Investigation of the Illumination of the Night Sky

a constant intensity lamp. The etalon is used with a light filter having a passband equal to the region of night sky under investigation. The errors from this cause can be reduced to 0.5-1%.
Particular attention must be paid to the linearity of the light characteristics of photoelectric instruments. An example of satisfactory linearity for a caesium oxide cathode is shown in Figure 5. Antimony-caesium cathodes often deviate from this condition.
The measurements described were carried out in part by students of LGU - Verevkin, Volkov, Dovgolyuk, Navskiy and Prilezhayev.
There are 5 figures and 2 Soviet references.

SOV/49-58-8-14/17

On the Electrophotometric Investigation of the Illumination of the Night Sky

ASSOCIATIONS: Leningradskiy gosudarstvennyy universitet (Leningrad State University) and Institut prikladnoy geofiziki Akademii nauk SSSR (Institute of Applied Geophysics of the Ac.Sc.USSR)

SUBMITTED: June 22, 1957

1. Night sky--Radiation

Card 7/7

R. Dronov, S.F.

Summary No. 38
(Revised Version)

IUGG/IAMAP OZONE COMMISSION

OXFORD, JULY 1959.

ON CERTAIN GEOMETRIC INVESTIGATIONS IN USSR

By A.I. Abramovich and S.F. Radionov,
Leningrad, USSR.

1. Since the year 1934 at the Physical Institute of the Leningrad State University, a series of investigations on the transparency of the atmosphere in the ultra-violet region have been carried out. Measurements have been made of the ozone content in the atmosphere, taking into consideration a number of factors.

Electrophotochemical methods of high sensitivity, tested out in our laboratory, have been applied in these investigations. Most of the observations to measure ozone were made in high mountains, (Mount Elbrus, Caucasus).

2. At different times different photometric methods were used:
   (a) A photo counter with a double quarts monochromator.
   (b) A photomultiplier with a double monochromator.
   (c) A simple monochromator with a photocell or photomultiplier applied with a system of light filters.
   (d) A modernized Dobson spectrometer with a photomultiplier.
   (e) An automatic self-recording electrophotometer with light filters.

3. During the period from 1948 till 1958 at different places in the USSR, measurements of the direct solar ultra-violet light were made. The data obtained were worked up according to the Lambert-Bouguer law and the values of the total ozone content in the atmosphere were determined.

4. As early as 1934-1940 the ozone contents, a wave distribution curve of the solar brightness of the spectrum was obtained in absolute units; and the ultra violet limit of the solar spectrum observed by means of the most sensitive method was determined.

5. We discovered the so-called effect of anomalous transparency of the atmosphere at great zenith distances of the sun, which mislead us to apply the "Dobson" method. The effect is explained by the presence in the atmosphere of a permanent layer of aerosols with selective transparency with a maximum of extinction at 3800-4000 Å. The theory of the effect was given.

6. A whole series of aerometric data were obtained by means of moonlight.

7. A sharp increase of the quantity of ozone during sun eclipses in the years 1952 and 1954 was observed. The increasing of the ozone contents during the full eclipse was shown.

8. In comparing the aerometric data with meteorological factors we succeeded in making some conclusions on the correlations of atmospheric ozone with the atmospheric circulation processes.

9. We have made also a comparative analysis of the electrophotometric observations.

BOL'SHAKOVA, L.G.; GEORGIYEVSKIY, Yu.N.; OTTO, A.N.; RODIONOV, S.F.

Electrophotometric investigation of noctilucence of the sky.
Mezhdunar.geofiz.god no.4:58-59 '59. (MIRA 11:11)
(Geophysics) (Photometry)

3.1540
~~29(2)~~

66878
SOV/54-59-4-4/22

AUTHOR: Rodionov, S. F.

TITLE: Investigation of Night Sky Radiation (Under the IGY Program)

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 4, pp 27-32 (USSR)

ABSTRACT: This article contains provisional results of measurements of the radiation intensity and spectrum of the night sky made by the Laboratoriya fotometrii kafedry optiki (Laboratory of Photometry of the Chair of Optics) at the top of the Elbrus Mountain. The measurements were made under the IGY program. An FEU photomultiplier with antimony-cesium or oxide-cesium cathode, designed by the afore-mentioned laboratory (description in references 1, 2) was used. The intensity change during the night was observed in spectrum ranges of the bands λ_{max} = 5577 Å and 6300 Å (green and red O-line) and in the region $\Delta\lambda$ = 6500-7500 and 9000-11000 Å (the latter with the OH- and H_2-bands). From 1957-1959, 42 spectra were obtained, which reflect in all detail the intensity change during one night. The most typical ones are shown in figures 1-4. In addition to maxima about midnight, maxima irregularly appearing throughout the night, and small short-term maxima were observed in the infrared region. In other wavelength

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Investigation of Night Sky Radiation (Under the IGY Program) SOV/54-59-4-4/22

ranges it was not possible to observe any changes in the regular intensity distribution during the night. To determine the effect of air transparency, the recordings were made at 2200 and 3900 m above sea level. The latter showed a far more regular intensity course (Fig 6). It results from the data on intensities and a comparison with the solar activity that there exists some relationship between intensities and solar activity (Table). The following scientists assisted in the measurements: L. G. Bol'shakova, Junior Scientific Worker, A. I. Otto, Laboratory Assistant, G. M. Petelin, Senior Laboratory Assistant, P. P. Konorov, Senior Scientfic Worker, V. V. Andreyev, Laboratory Assistant, as well as students of Leningrad State University, Department of Physics. There are 6 figures, 1 table, and 5 Soviet references.

SUBMITTED: April 15, 1959

Card 2/2

S/196/62/000/013/007/018
E032/E114

AUTHOR: Rodionov, S.F.

TITLE: Fluctuations in the light field

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.13, 1962, 2, abstract 13 V 12. (Tr. Leningr. o-va yestestvoispyt, v.72, no.1, 1961, 150-151).

TEXT: Studies of fluctuations in visual perception require an accurate knowledge of the fluctuation characteristics of the stimulant. A photon counter was used to study light fluctuations and ensured the recording of separate photons with the aid of short current pulses produced in the gas discharge gap of these counters. The average frequency of these pulses is proportional to the measured light flux (number of photons per unit time); the average square of the fluctuations in the light flux was determined with the aid of a transformed form of the Einstein formula.

ASSOCIATION: NIFI, Leningradskiy un-t (NIFI, Leningrad University)

[Abstractor's note: Complete translation.]

Card 1/1

L 17408-66 EWT(l)/EWT(m)/FCC/EWP(t) LJP(c) JD/GW
ACC NR: AT6007610 SOURCE CODE: UR/2960/65/000/003/0055/0060

41
B+1

AUTHOR: Rodionov, S. F.; Movchan, B. N.

ORG: Leningrad University (Leningradskiy universitet)

TITLE: Regular twilight variations of atmospheric transparency in the ultraviolet ozone spectral region

SOURCE: Leningrad. Universitet. Problemy fiziki atmosfery, no. 3, 1965, 55-60

TOPIC TAGS: atmospheric optics, twilight, atmospheric transparency, ozone spectral region, ozone layer electrophotometry

ABSTRACT: Investigations have been conducted by the Photometry Laboratory of Leningrad State University of regular variations of the terrestrial atmospheric transparency in the ultraviolet ozone region of the spectrum (2950—3300 Å). In addition to changes of transparency attributable to daily ozone fluctuations, the effect of anomalous transparency, and solar eclipses, regular variations in the ultraviolet region have now been found to result from the twilight effect. These twilight variations of transparency in the ultraviolet were detected as a result of a series of photoelectric observations made of the intensity of radiation from the moon and of scattered skylight in the circumlunar region at sunrise. On the basis of analysis of all regular variations of terrestrial atmospheric transparency in the ultraviolet region, it is concluded that: 1) two different types of varia-

Card 1/2

L 31001-66 EWT(1)/FCC GW

ACC NR: AT6007609 SOURCE CODE: UR/2960/65/000/003/0048/0054

AUTHOR: Rodionov, S. F.; Movchan, B. N.

ORG: none

TITLE: Application of the theory of multiple light scattering in the atmosphere to the effect of anomalous transparency

SOURCE: Leningrad. Universitet. Problemy fiziki atmosfery, no. 3, 1965, 48-54

TOPIC TAGS: anomalous transparency, direct solar light, ultraviolet spectral range, aerosol, spectral transparency, light scattering

ABSTRACT: The effect of anomalous transparency consists of an increase in the relative atmospheric transparency for light of shorter wavelengths when the sun nears the horizon. This effect can be detected by observations of direct solar light in the ultraviolet spectral range of the ozone zone at 2950—3260 Å. Several theories have been offered in explanation of this phenomenon. S. F. Rodionov (S. F. Rodionov. Prozrachnost' atmosfery v ul'trafioletovoy oblasti spektra. Izv. AN SSSR, Seriya geogr. i geofiz., t. 14, No. 4, 1950; S. F. Rodionov, Ye. N. Pavlova, Ye. V. Rdultovskaya, N. M. Reynov. Selektivnaya prozrachnost' atmosfernykh aerozoley. Izv. AN SSSR, Seriya geogr. i geofiz., No. 4, 1942.) explained anomalous transparency as resulting from specific atmospheric layers consisting of aerosols and appearing near the earth's surface in the morning and evening. Spectral investigations of atmospheric transparency showed

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L 31001-66
ACC NR: AT6007609

similarity to the spectral transparency of aerosols at the wavelengths 3125 Å and 3250 Å. The daily rate of the aerosol absorption bands with an increase of transparency at noon and a decrease at evening correlated with the daily rate of humidity changes. This could be considered as support of Rodionov's theory. G. V. Rozenberg (O granitsakh primenimosti zakona Bugera i ob effektakh obrashcheniya, anomal'noy prozrachnosti i selektivnoy prozrachnosti atmosfery. DAN SSSR, t. 145, No. 6, 1962.) and G. P. Gushchin (K teorii effekta anomal'noy prozrachnosti. Izv. AN SSSR, seriya geofiz., No. 8, 1962.) hypothesized the anomalous transparency as a result of multiple light scattering in the atmosphere at a low position of the sun. An attempt was made to support this hypothesis by observations at sea level, but the results of the observations were criticized. In 1962, photometric measurements in the spectral ultraviolet ozone zone were carried out at a height of 4250 m above sea level. The goal of these measurements was to examine the possibility of applying light scattering to anomalous transparency. The distribution of brightness above the solar disk and the aureole near the disk were measured at sunrise and sunset, and the results of the measurements were represented graphically in the original article. No increase of brightness in the solar aureole was found for various zenithal distances of the sun at the moment of development of anomalous transparency. Light scattering cannot be considered to be the reason for anomalous transparency. Orig. art. has: 5 figures. [EG]

SUB CODE: 04/ SUBM DATE: 07Feb64/ ORIG REF: 010/ ATD PRESS: 4214

Card 2/2 LC

L 2792-66 FSS-2/EWT(l)/EWT(m)/FS(v)-3/EPF(c)/EEC(k)-2/EWA(d)/EWP(t)/EWP(b)
ACCESSION NR: AP5021355 LJP(c) JD/TT/GW

UR/0120/65/000/004/0171/0174
551.508.552

52
46
B

AUTHOR: Bol'shakova, L. G.; Osherovich, A. L.; Rodionov, S. F.; Suslov, A. K.; Shpakov, N. S.
44,55 44,55 44,55 44,55 44,55

TITLE: Photoelectric ozonometers for studying vertical ozone distribution

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 171-174 12,44,55

TOPIC TAGS: ozonometer, photoelectric ozonometer, ozone distribution

ABSTRACT: Two types of photoelectric ozonometers are compared, one with an orientation system and the other with a gypsum scattering screen. The system used in the sun-oriented ozonometer permitted it to be trained on the sun with an accuracy of ±5'. The ozonometer had two independent amplifier channels, for λ_1 = 3100 Å and λ_2 = 3300 Å; signals from each channel were mechanically switched to a recorder. Monochromatic filters were used to increase measurement accuracy. The cesium-antimony phototubes had a spectral sensitivity limit of ~6500 Å, which eliminated the effect of the second maximum of filter transmission at λ = 7200 Å. The advantage of the screen-type ozonometer developed by the authors is that it needs no orientation system. It was found that a 5° nonperpendicularity of the screen to the opti-

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L 2792-66

ACCESSION NR: AP5021355

6

cal axis and a 20° deviation of the ozonometer from the vertical had no effect on the ratios of signal intensities I_1/I_2. In tests conducted at Karadag (Crimea) and Elbrus, direct and scattered radiation was measured almost simultaneously in the same ozonometer at various values of Z_0. Results on ozone distribution agree with those in the literature cited. This ozonometer is considered to be reliable and virtually unaffected by atmospheric conditions. Orig. art. has: 7 figures, 1 table, and 2 formulas.

[TS]

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: 11Jan64 ENCL: 00 SUB CODE: ES, EC

NO REF SOV: 007 OTHER: 005 ATD PRESS: 4103

BVK

Card 2/2

RODIONOV, S.F.; VEREVKIN, Yu.N.; SHPAKOV, N.S.

Eclipse effect in the ozone region of the solar spectrum. Vest. LGU 18 no.4:67-72 '63. (MIRA 16:3)
(Eclipses, Solar) (Spectrum, Solar)

OSHEROVICH, A.L.; RODIONOV, S.F.

Some parameters of modern telephotometric systems.
Isk.sput.Zem. no.14:69-73 '62. (MIRA 15:11)
(Photometry, Astronomical--Equipment and supplies)

S/081/63/000/004/011/051
B193/B180

AUTHORS: Osherovich, A. L., Rodionov, S. F.

TITLE: Some types of photoelectric ozonometer

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1963, 166, abstract 4D45 (In collection: Atmosfern. ozon. M., Mosk. unt, 1961, 72 - 81 [summary in Eng.])

TEXT: Two types of photoelectric ozonometer are described. An integral device with light filters is proposed for operation in a wide ozonometric network. Interference light filters with dielectric coating are used to separate the narrow band of the spectrum in the wavelength region 3100 - 3300 Å, and in certain cases 4000 - 4500 Å. The block diagram of the device consists of a photomultiplier ФЭУ-11 (FEU-11) (or ФЭУ-18 (FEU-18)) and an amplifier (a differential cathode follower is used to reduce zero drift; at a current gain of $5 \cdot 10^4$ the zero drift in three hours was $\ll 2\mu a$). The second, observatory type, device is a three-channel ozonograph with diffraction gratings. The device consists of a coelostat for maintaining a fixed image of the sun, duplex monochromator with diffraction gratings

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S/081/63/000/004/011/051
B193/B180

Some types of photoelectric ozonometer

and fixed slots for separating the three parts of the spectrum (the linear dispersion at the outlet of the spectral system is 12.3, 7.8 and 7.3 Å/mm for wavelengths 3100, 3300 and 4358 Å respectively), and an electrophotometer with a 3-dot recorder. An important feature of the new device is the combination of high spectral resolution with high sensitivity, low inertia and objective recording. Due to these properties it can be used to measure small radiation amounts in rapidly varying conditions. [Abstracter's note: Complete translation.]

Card 2/2

S/169/63/000/002/017/127
D263/D307

AUTHORS: Osherovich, A. L. and Rodionov, S. F.

TITLE: On some types of photoelectric ozonometers

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 14, abstract 2B111 (In collection: Atmosfern. ozon, M., Mosk. un-t, 1961, 72-81 (summary in Eng.))

TEXT: A description is given of 2 types of photoelectric ozonometers. In the first instrument interference filters with a dielectric coating were used for the separation of fairly narrow spectral bands (3100 - 3300 and 4000 - 4500 Å). A photoelement was used as the light receiver. The photocurrent was amplified with a d.c. amplifier with a differential cathode follower. The second ozonometer, which is of the observatory type, has a high dispersive power (linear dispersion is 12.3 Å/mm at 3100 Å), a high sensitivity, and a low inertia. The instrument consists of a coelostat for automatic guidance of the solar image, a double monochromator with diffraction gratings and unadjustable slits for the separation of three regions

Card 1/2

On some types of ...

S/169/63/000/002/017/127
D263/D307

of the spectrum, and an electrophotometer with an automatic pen.
[Abstracter's note: Complete translation.]

Card 2/2

S/054/63/004/001/009/022
B102/B186

AUTHORS: Rodionov, S. F., Verevkin, Yu. N., Shpakov, N. S.

TITLE: The eclipse effect in the O_3 region of the solar spectrum

PERIODICAL:: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 1, 1963, 67-72

TEXT: After a short description of earlier observations of the eclipse effect (1952,1954) the authors report on their own observations made during the total solar eclipse (February 15, 1961). Their ozonometric measurements were a part of the solar spectral research program of the Laboratoriya fotometrii NIFI LGU (Laboratory of Photometry of the NIFI LGU). The observations were made in Rostov (center of the belt of totality), in Vol'sk, Saratov oblast' (boundary of the belt) and in Roshchino, Leningrad oblast' (partial eclipse). The results are shown in Fig. 3. The logarithms of the relative intensities (λ_1=3100, λ_2=3300, λ_3=4100Å) of scattered light from the zenith are plotted versus time. The effect was for the first time observed with a cloudy sky. The experiments

Card 1/2

The eclipse effect in the ...

verified the presence of an ecliptic effect resulting in a reduction of relative transparency of the atmosphere in the O_3 spectral region. A "heliophysical" explanation of the effect yields only a qualitative result (DAN SSSR,106,no.4,1956). Other explanations - e.g. the formation of selectively scattering aerosols - are also more or less unsatisfactory. There are 5 figures.

SUBMITTED: June 7, 1961

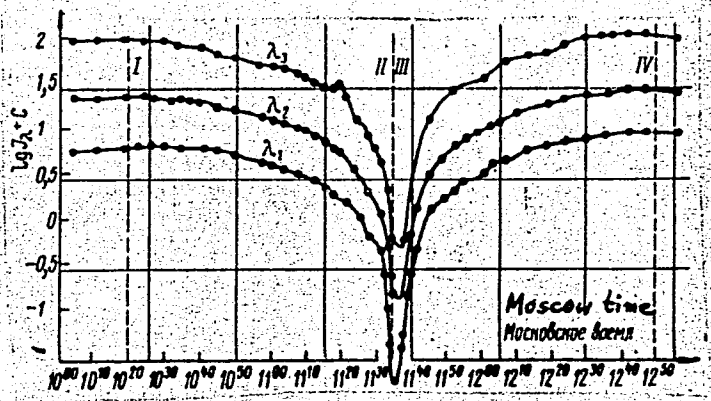

Fig. 3

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44834

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A001/A101

3,5800
3,4170

AUTHORS: Osherovich, A. L., Rodionov, S. F.

TITLE: On some parameters of modern telephotometric systems

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no. 14, 1962, 69 - 73

TEXT: Various types of telephotometers are used in studies of the spectral albedo of the Earth's surface and planets. Telephotometers use photomultipliers as receivers of radiation. The time constant of the device output circuit is 10^{-6} - 10^{-7} sec and integrated sensitivity is high, which features are advantageous in this type of receivers. The characteristics of cathodes in photoelectric amplifiers are shown in Table 1. The optical characteristic of these amplifiers remains linear up to constant currents of 10^{-5} - 10^{-6} amp. The spectral sensitivity of photomultipliers depends on temperature. There are several types of amplifying and recording units in telephotometers: 1) D—c. amplifiers can measure optical signals down to 10^{-14} w with an accuracy up to 1%; 2) A—c. amplifiers have the sensitivity threshold of 10^{-14} w with an accuracy of 2%;

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On some parameters of modern telephotometric system

3) Telephotometers with photon counters have sensitivity threshold of 5×10^{-16} w with an accuracy of 3 - 5%; 4) The circuit (Bote, Bote and Geiger) which integrates pulses by means of a capacitor have sensitivity threshold of 5×10^{-15} w with an accuracy of 3 - 5%. The systemswith photon counters can be employed only in cases of relatively low dark background when the number of dark pulses does not exceed 50 - 200 pulse/sec. There are 3 figures and 2 tables.

SUBMITTED: February 26, 1962

Card 2/3

On some parameters of modern telephotometric systems

Table 1. Characteristics of photocathodes

Type of cathode		λ_{max}, μ	λ_o red edge, μ	γ_{max} (2640°K) amp.lm^{-1}	ϵ_{max}, %	I_T, 10^{-16} amp.cm^{-2}
(Ag)Cs_2OCsAg		0.85	1.2-1.4	30	1	10^3-10
(Ag)Ag_2ORb		-	0.95	6 - 10	-	-
BiAgOCs		0.45	0.75	60-90	10	10^2
Fused cathodes	Cs_3Sb	0.4	0.62	60-90	20	10^2-10
	Li_3Sb	-	0.57	5-20	-	1
	Cs_3Bi	-	0.8	8-25	-	-
	K_3Sb	0.35	0.5	-	7	-
	Na_3Sb	0.27	0.37	-	2	-
Multialkaline cathodes	Na_3SbNa	-	0.42	1	-	-
	K_3SbK	-	0.55	5	-	-
	Na_2KSb	0.37	0.65	50-60	25	1
	Na_2KSb	0.40	0.85	180-230	35	1
	SbTe	0.31	0.4	-	10	1

Card 3/3

ACC NR: AP7002407 SOURCE CODE: UR/0363/66/002/012/2237/2240

AUTHOR: Sukhorukov, I. F.; Rodionov, S. G.; Polovoy, B. V.

ORG: State Scientific Research Institute of the Electrode Industry, Chelyabinsk (Gosudarstvennyy nauchno-issledovatel'skiy institut elektrodnoy promyshlennosti)

TITLE: Effect of heat treatment of raw materials on the strength of fine-grained graphite

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 12, 1966, 2237-2240

TOPIC TAGS: graphite, pyrolysis, ~~pyrolytic graphite~~, high temperature material, heating, compressive strength, GRAPHITIZATION, SINTERING

ABSTRACT: The effect has been studied of carbonaceous material additives with a different heat-treatment history on the quality of fine-grained graphite for anodes and grids of mercury-arc rectifiers. In the first series of experiments, the contact angle of wetting the carbonaceous additives with coal-tar pitch was measured in the 70—150C range to determine their surface energy which depends on heat treatment and which affects the quality of the pyrolytic graphite products. The wetting angle was determined by a photographic method on finely ground

Card 1/3 UDC: 546.26—162:539.4

ACC NR: AP7002407

compacted materials. The materials studied were: pyrolytic petroleum coke prepared at 450C from pyrolytic tar and subsequently calcined at 1250—1280C; sintered material which was a product of baking at 850 to 900C of the pyrolytic coke with coal-tar pitch; synthetic graphite obtained by heating the sintered material at 2450C; and natural graphite. The plots of the contact wetting angle of these materials versus temperature indicated a decrease in wetting with an increase in the degree of heat treatment of the materials. In the second series of experiments, compressive strength and density were determined of the pyrolytic graphite products which contained sintered or graphitized materials in variable proportions. Test specimens 20 x 20 x 20 mm in size were prepared from blanks which were obtained by baking the compacted mix at 850C for 24 hr and graphitizing at 2450C by a standard industrial procedure. The experimental data are summarized in Table 1. The data indicated that the blanks with the sintered material addition have the maximum strength. The optimum composition was at 5% of the sintered additive because of cracks due to nonuniform shrinkage of the components in the blanks with over 20% additive. Addition of the sintered material contributed to quality stabilization of the product, while addition of graphitized material was detrimental to stability under working conditions. The wettability data were correlated with the quality characteristics of the products studied. Orig. art. has: 1 figure and 3 tables. [W. A. 88]
[JK]

Card 2/3

ACC NR: AP7002407

Table 1. Properties of the products with various additives

Additive	Property	% material added								
		3	5	6	7	15	20	30	40	70
Sintered material	*	1,57	1,59	1,58	1,57	1,57	1,57	1,57	1,58	1,61
	**	320	350	340	320	330	335	342	360	443,4
Graphitized material	*	1,59	1,56	1,53	1,54	1,55	1,54	1,55	1,54	1,5
	**	330	306	290	283	270	260	252	238	211

*Weight by volume, g/cc
**Compression, kg/cm^2

SUB CODE: 11/ SUBM DATE: 04Nov65/ ORIG REF: 005/ OTH REF: 001

Card 3/3

L 2789-66 EWP(e)/EWT(m)/EPF(c)/EWP(i)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c)
IJP(c) JD/WW/HW/WH

ACCESSION NR: AP5022245 UR/0363/65/001/007/1005/1009
546.26-162:539

38
37
B

AUTHOR: Shulepov, S. V.; Oshchepkova, N. V.; Sukhorukov, I. F.; Rodionov, S. G.; Pronyushkina, M. V.

TITLE: Defects of the microstructure of synthetic graphite 15

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 7, 1965, 1005-1009

TOPIC TAGS: graphite, carbon product

ABSTRACT: The purpose of the work was a microscopic study of fine- and medium-grained hot-extruded graphite and the determination of the microstructural defects and their influence on the basic physicomechanical properties of the material. Electrode material, "green" and heat treated electrode blanks, and graphitic carbon materials produced by domestic electrode plants were investigated. Defects in the form of conglomerates, i.e., round masses with a circular particle orientation, were observed in all the samples. The properties of the uniform material and material containing conglomerates are compared. It is found that the density does not determine the quality of the microstructure and remains

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L 2789-66
ACCESSION NR: AP5022245

practically constant at 1.6-1.7 g/cm^3. The compressive strength of the uniform material is 25-30% higher than that of the material with conglomerates (350 and 475 kg/cm^2, respectively); the oxidizability of the uniform material during 2 hr at 700C is 28.5%, and its pulverization during physical vacuum tests almost 20% less than that of the material with conglomerates. The microstructural defects observed are stable and do not disappear as the extrusion temperature and pressure are raised, and disturb the isotropy of the properties of the material. An interpretation of the mechanism of defect formation is given. Orig. art. has: 3 figures.

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut elektrodnoy promyshlennosti (State Scientific Research Institute of the Electrode Industry)

SUBMITTED: 07Jan65 ENCL: 00 SUB CODE: MT

NO REF SOV: 004 OTHER: 000

Card 2/2 md

SHULEPOV, S.V.; OSHCHEPKOVA, N.V.; SUKHORUKOV, I.F.; RODIONOV, S.G.; PROMYSHKINA, M.V.

Microstructure defects of artificial graphite. Izv.AN SSSR.Neorg. mat. 1 no.7:1005-1009 Jl '65. (MIRA 18:9)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut elektrodnoy promyshlennosti.

S/035/62/000/012/048/064
A001/A101

AUTHOR: Rodionov, S. I.

TITLE: Demands on aerial surveys performed by the radio photogrammetric method for field control

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 12, 1962, 16, abstract 12G114 ("Tr. Novosib. in-ta inzh. geod., aerofotos"yemki i kartogr.", 1961, v. 15, 9 - 15)

TEXT: In using the radio photogrammetric method of bridging aerial photographs, based on measuring distances between two aircraft flying behind one another and equipped with synchronous aerial cameras (see abstract 113), there are additional demands on aerial survey work: forward and lateral overlaps of aerial photographs must be within the range 56 - 70%, and instants of measuring the bases, determined by means of aerial range finders, must correspond to instants of full opening of shutters of both cameras. To fulfill the last condition, it is necessary first, to ensure synchronous functioning of АФА (AFA) shutters and second, to ensure synchronous operation of AFA with the photorecorder of the

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Demands on aerial surveys performed by the...

S/035/62/000/012/048/064
A001/A101

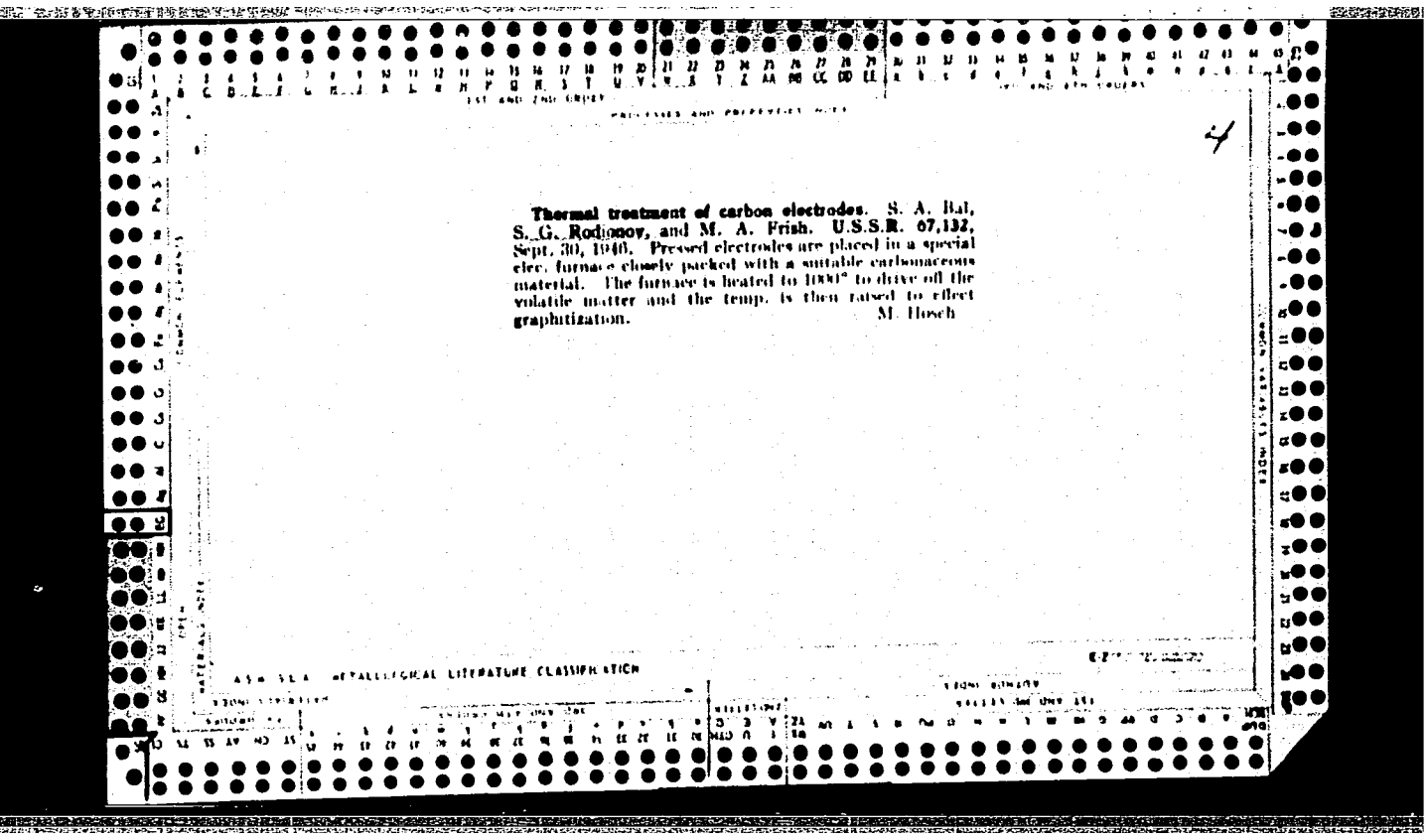
aerial radio range finder. As a result of presented calculations, it is stated that for measuring bases with an accuracy of ±0.3 m, it is necessary to synchronize the functioning of shutters of the aerial camera and photorecorder with an error of 1/20 sec. and the functioning of shutters of two AFA's with an error of 1/1,000 sec., or with the same error to determine time intervals between the instants of operating of AFA shutters at admissible desynchronizing in their work not exceeding 1/20 sec.

V. O.

[Abstracter's note: Complete translation]

Card 2/2

RODIONOV, S. I., Cand Tech Sci -- (diss) "Some problems in the utilization of aerial photography in location studies in railroad surveys." Novosibirsk, 1960. 12 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Institute of Engineers in Geodesy, Aerial Photography, and Cartography); 150 copies; price not given; printed by duplicating machine; (KL, 19-60, 135)



Thermal treatment of carbon electrodes. S. A. Bal, S. G. Rodionov, and M. A. Frish. U.S.S.R. 67,132, Sept. 30, 1946. Pressed electrodes are placed in a special elec. furnace closely packed with a suitable carbonaceous material. The furnace is heated to 1000° to drive off the volatile matter and the temp. is then raised to effect graphitization.
M. Hosch

LITVIN, Aleksandr Lukich [Lytvyn, O.L.]; RODIONOV, S.G. [Rodionov, S.H.], otv.red.

[Rare elements in nature and engineering] Ridkisni elementy v pryrodi i tekhnitsi. Kyiv, 1960. 39 p. (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan' Ukrains'koi RSR. Ser.5, no.17) (MIRA 14:2)
(Metals, Rare and minor)

L 23319-65 EWT(1) GW

ACCESSION NR: AR5002280 S/0044/64/000/010/B098/B098

SOURCE: Ref. zh. Matematika, Abs. 10B467

AUTHOR: Rodionov, S. I.

TITLE: Analytical means of spatial phototriangulation by means of electronic numerical calculating machines

CITED SOURCE: Tr. Novosib. in-ta inzh. geod., aerofotos"yemki i kartogr., v. 17, no. 2, 1964, 3-14

TOPIC TAGS: spatial phototriangulation, electronic numerical calculating machine, stereo-comparator, radio sound range altimeter, scalar approximation, geodesic orientation, photogrammetrical coordinate, triangulation mean square error

TRANSLATION: An improved way of analytical phototriangulation is described, with the use of the ETSVM; this was developed at the Department of Photogrammetry of NIIGAiK. To increase condensation accuracy, the number of observation points on the stereo-comparator has been increased, the utilization of ele-

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L 23319-65

ACCESSION NR: AR5002280 0

ments of exterior orientation determined during the flight has been provided for, and a more complete count of systematic erors of the net structure is proposed. A schematic technological setup is shown of the means by which the designed algorithm affords calculations in the presence of the statoscope and radio sound range altimeter, as well as in their absence. The operative setup of the calculation is discussed for entering, in addition to the earlier elements, calculations of new elements of interorientation by iterative approximation, calculations of photogrammetrical coordinates of points in unique models, scalar and horizontal approximations of unique models, adjustment of the net beyond the conditions of the bases, joining the specific models in the itinerary net at the connecting points and geodesic orientation of the itinerary net. In the results presented for experimental triangulation work conducted by the proposed means with mock-up photos, the mean square errors in determining the point coordinates amounted to ±0.005-0.008 m; if industrial photographs were used and the net was extended to 15 bases, the mean square error of coordinate and high point determination was equal to ± 3.2-5.1 m. V. Orlov

SUB CODE: DP, MA ENCL: 00

Card 2/2

L 22220-65 FSS-2/EWT(1)/EWA(d)/T/EED(b)-3 Pae-2 IJP(c)/SSD/BSD/ASD(a)-5/
AFETR/RAFM(1)/ESD(ga)/ESD(t) GW
ACCESSION NR: AR4049244 S/0270/64/000/008/0021/0022

SOURCE: Ref. zh. Geodeziya. Otd. vy*p., Abs. 8.52.141

AUTHOR: Rodionov, S. I.

TITLE: An analytic procedure for spatial phototriangulation using electronic digital computers

CITED SOURCE: Tr. Novosib. in-ta inzh. geod., aerofotos"yemki i kartogr., v. 17, no. 2, 1964, 3-14

TOPIC TAGS: analytic phototriangulation, digital computer grid plot error calculation, phototriangulation program, point coordinate error, aerial photography, aerial mapping.

TRANSLATION: The article presents an improved procedure for analytic phototriangulation. It employs electronic digital computers and was evolved at the department of photogrammetry of NIIGAandK. To increase the accuracy of

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ACCESSION NR: AR4049244

condensation, the procedure calls for an increased number of stereocomparator observation points, envisions the use of in-flight determined surface orientation elements and proposes a more detailed computation of systematic errors related to grid plotting. A flow sheet is presented for use with the cited technique, in which an evolved algorithm makes it possible to carry out calculations irrespective of the availability or the absence of radio altimeter and stethoscope readings. The author discusses a calculation program involving, in addition to preliminary data, the computation of relative orientation elements by successive approximation, the calculation of photogrammetric point coordinates in isolated models, approximate scaling and levelling of isolated models, grid compensation to satisfy base point conditions, integration of individual models into a continuous grid along connecting points and the geodetic orientation of the continuous grid. Results of experimental triangulation with model photos, using the proposed method, produced mean square deviations of ± 0.005 to 0.008 m in determining point coordinates. The mean square deviations in determining coordinates and elevations of points were ± 3.2 to 5.1 when using production photos at a grid length of 15 base points. V. Orlov

Card 2/3

KUSEVITSKIY, I.A., prof., RODIONOV, S.I., LYUTROVNIK, L.L.

Case of myelosclerosis in tuberculous spondylitis [with summary in French]. Probl.tub. 36 no.5:115-116 '58 (MIRA 11:8)

1. Iz sanatoriya "Krasnaya Roza" Mosoblzdravotdela (glavnyy vrach L.V. Anisimov).
(TUBERCULOSIS, SPINAL, compl.
myelosclerosis (Rus))

RODIONOV, Semen Ivanovich, kand. tekhn. nauk; SAFONOV, P.V., red.; LAVRENOVA, N.B., tekhn. red.

[Calming of waves by compressed air; pneumatic breakwaters] Gashenie voln szhatym vozdukhom; pnevmaticheskie volnolomy. Moskva, Izd-vo "Morskoi transport," 1958. 47 p. (MIRA 11:7)
(Waves, Calming of) (Breakwaters)

RODIONOV, S.I.

Transactions of the Laboratory (Sbornik) of Aeromethods, AS USSR SOV/3815
V.7, Materials of 7th AU Interdept Conf. Aerial Survey (Dec 56), Moscow, 1959, 331pp.
by the State Institute for Inland-Waters Transport Planning and Scheduling 221

Ivanov, K.Ye. [State Hydrological Institute].
Application of Aerial Photography in the Hydrological Computations of the Water Regime in Swamps 226

Glagolev, A.V. [Lengiprotrans - Leningrad State Institute of Railway and Highway Planning].
Aerial-Photography Used in the Planning and Location Appraisal of Rail Transport Lines and Facilities 230

Rodionov, S.I. [Novosibirsk Institute of Geodetic, Photogrammetric, and Cartographic Engineering].
Application of the Topographic Stereometer to the Laying Out of Railroad Tracks 240

Bratsev, L.A. [Komi filial, AN SSSR - Academy of Sciences USSR, Komi ASSR Branch].
Application of Aerial Photography to Coal-Mine Planning Under the Permafrost Conditions of the Pechora Basin 244

Card 10/ 15

RODIONOV, S.I.

Using the topographic stereometer in railroad route surveys.
Trudy Lab.aeromet. 7:240-243 '59. (MIRA 13:1)

1. Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii.
(Aerial photogrammetry) (Railroads--Surveying)

OBERMEYSTER, Arkadiy Mikhaylovich; SMIRNOV, Yevgeniy Vasil'yevich; ARKHIPOV, Ye.Ye., retsenzent; GRINEVICH, G.P., retsenzent; RODIONOV, S.I., red.; ALEKSEYEV, V.I., red.izd-va; YERMAKOVA, T.T., tekhn.red.

[Over-all mechanization and automatization of loading and unloading operations in transportation] Kompleksnaia mekhanizatsiia i avtomatizatsiia peregruzochnykh rabot na transporte. Moskva, Izd-vo "Rechnoi transport," 1960. 84 p. (MIRA 14:1)

(Transportation) (Material handling)

ROMIONOV, S. N., Cand of Phys-Math Sci -- (diss) "Experimental Study of the Behavior of Charged Particles in an Adiabatic Trap," Novosibirsk, 1959, 9 pp (Siberian Department, ~~of the~~ Institute of Nuclear Physics, Academy of Sciences USSR) (KL, 8-60, 114)

SOV/89-6-6-2/27

21(7)

AUTHOR: Rodionov, S. N.

TITLE: Experimental Examination of the Behaviour of Charged Particles in an Adiabatic Trap (Eksperimental'naya proverka povedeniya zaryazhennykh chastits v adiabaticheskoy lovushke)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 6, pp 623 - 629 (USSR)

ABSTRACT: By way of introduction the problem and some previous investigations are discussed. Among others G. I. Budker (Ref 1) investigated in adiabatic approximation the Coulomb scattering effect on the life time of charged particles in an adiabatic trap. The author of the present paper carried out a series of interesting experiments on which he reports in this article. At first the experimental arrangement and the experiments itself are discussed. In principle the motion and the distribution of the β -particles forming due to tritium decay are investigated; tritium is contained in a glass vessel surrounded in a certain way by electromagnets (see fig 1); the maximum field H_{max} = 5000 Oe (at the poles) and H_o = 600 Oe in the center of the container; $H_{max}/H_o = \gamma$, γ is between 1 and 40.

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Experimental Examination of the Behaviour of Charged Particles in an Adiabatic Trap

SOV/89-6-6-2/27

A container with freshly prepared UT_3 (with He^3-traces) (tritium activity $\sim$1 C) which is surrounded by a heater is connected with the chamber lined with aluminum electrons. The pressure is measured by means of a gauge tube. At 100°C the pressure in the chamber is $\sim 10^{-3}$ torr, at the temperature of the liquid nitrogen it amounts $\sim 10^{-7}$ torr. The measurement of the ionization current (which is proportional to the amount of the formed β-particles) was made by means of a standard electrometer with an amplification that guaranteed a sensitivity of up to 5.10^{-14}a. The currents measured were between 5.10^{-9} and 5.10^{13} a. The determination of the background currents is then briefly discussed; such a current may be supplied by the He^{3+} ions and also by the secondary electrons forming under the action of the β-particles. The dependence of the ionization current I on the commutator voltage was measured for control purposes; the curve (Fig 2) shows a steep rise, stabilization, and a characteristic slight decrease at $I > 750$ v where the electric field begins to influence

Card 2/4

the movement of the β -particles. The results of the investigations are shown by two tables and some diagrams. a) Pressure determination: it holds that: $I \sim p_T(p_T+\alpha\ p_d)/(p_T+p_o)$; p_T denotes the tritium pressure, p_d the pressure of the foreign gas (in the trap), $\alpha = \sigma_{id}/\sigma_{iT}$, σ_i = ionization cross section; p_o is the tritium pressure at which β -particles leave the trap. The ratio of the ionization currents in the trap and in the gauge is proportional to $p_T/(p_T+p_o)$ (Fig 3) which permits the determination of p_o. b) Determination of energy losses, number of the reflected β -particles N and their life time τ in the trap; the following results are published:

E (kev)	$N.p_T$ (torr)	$\tau.p_T.10^8$ (sec.torr)
1	5.7	4
2	11.1	8.3
3	15.5	12
4	18.3	15
5	20.6	18.3
6	21.4	20.2

The life time τ of the β -particles in the trap; $\tau = \frac{2.10^{-7}}{p_T}$ sec; the dependence of τ on H_o (field in the center) at $\gamma = 5$ is shown by figure 4, in the case that $p_T \gg p_o$. The dependence of τ on H_o at given H_{max} (3000 and 4000 Oe) is shown by figure 5, and figure 6 shows (a comparison between experiment and theory) τ as a function of γ. In conclusion, the author thanks G. I. Budker for his interest, advice, and suggestion of the topic, P. Ye. Spivak for assistance in the experiments as well as M. D. Senin and Yu. V. Gagarinskiy for the preparation of the UT_3-sample. There are 6 figures, 2 tables, and 7 references, 4 of which are Soviet.

SUBMITTED: April 11, 1959

Card 4/4

24C

L 44304-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pab-10 IJP(c) GS

ACCESSION NR: AT5007921 S/0000/64/000/000/0274/0287 26 64 B41

AUTHOR: Bayyer, V. N.; Blinov, G. A.; Bondarenko, L. N.; Yerozolimskiy, B. G.; Koroheynikov, L. S.; Mironov, Ye. S.; Naumov, A. A.; Onuchin, A. P.; Panasyuk, V. S.; Popov, S. G.; Sidorov, V. A.; Sil'vestrov, G. I.; Skrinskiy, A. N.; Khabakhpashev, A. G.; Auslender, V. L.; Kiselev, A. V.; Kushnirenko, Ye. A.; Livshits, A. A.; Rodionov, S. N.; Synakh, V. S.; Yudin, L. I.; Abramyan, Ye. A.; Vasserman, S. B.; Vecheslavov, V. V.; Dimov, G. I.; Papadichev, V. A.; Protopopov, I. Ya.; Budker, G. I.

TITLE: Colliding electron-electron, positron-electron, and proton-proton beams

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 274-287

TOPIC TAGS: high energy interaction, high energy plasma, particle physics, particle beam, charged particle beam

ABSTRACT: In the Institute of Nuclear Physics, Siberian Department, Academy of Sciences SSSR, programs on high-energy particle physics are mainly concerned with work on colliding charged particle beams. The Institute considers it unsuitable

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ACCESSION NR: AT5007921

for its purpose to install huge accelerators whose construction requires large resources outlaid and long time. For work on colliding electron-electron, positron-electron, and proton-proton beams, three installations are being built, which are in various stages of readiness. Work on colliding electron beams was conducted at the institute (then a laboratory of the Institute of Atomic Energy imeni I. V. Kurchatov) in the Fall of 1956, after Kerst's report on accelerators with colliding proton beams of the FFAG type. By that time Soviet scientists had already acquired some experience in obtaining large electron currents; in particular, the mentioned laboratory had installed and then abandoned a device for the spiral storage of electrons (G. I. Budker and A. A. Naumov, CERN Symposium, 1, 76 (1956)), by which, subsequently, circulating currents of the order of 100 amperes were obtained. In 1957 two variants of this device were considered at the same time. The first one consisted of two accelerators with spiral storage and subsequent transition of the particles to synchrotron state in comparatively narrow paths. The second one had storage rings with constant magnetic field and frequent external injection because of the damping of the oscillations under the action of radiation. The first variant was more cumbersome; the second variant contained an element not developed at that time, namely a 100-kilovolt commutator of 10 kilo-amperes with nanosecond front. At the end of 1957, the first positive results were obtained

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